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USEFUL RECEIPTS.

Preserving Fruits in their Own Juice.

Thirteen bottles of preserved fruit were exhibited lately at Rochester, New York, by William R. Smith, of Wayne County, viz:—five of cherries, two of peaches, one of different varieties of currents, one of blackberries, and one of plums.

They were examined by a committee, and found of fine flavor, and the committee expressed the opinion that the art of preserving fruit in this manner is practicable, and that the fruit, when carefully put up, can be made to keep as long as may be desirable.

The method of preserving is thus given to the New York State Society by Mr. Smith:

"They are preserved by placing the bottles, filled with the fruit, in cold water, and raising the temperature to the boiling point as quickly as possible; then cork and seal the bottles immediately. Some varieties of fruit will not fill the bottle with their own juice—these must be filled with boiling water and corked as before mentioned, after the surrounding water boils."

[Fruits can also be preserved by carbonic acid gas. The bottles after the fruit is put into them, should be charged with this gas under pressure, to expel all the air, then sealed up.

Preservation of Grapes.

We find the following translation of an article in a German paper, in the "New York Agricultor," which contains an account of the preservation of grapes in Russia:—

"A traveller who lived at St. Petersburgh during the winter season, states that he ate there the freshest and most beautiful grapes he had ever seen. To preserve them they should be cut before being entirely ripe. Do not handle the berries, reject all the damaged ones, then lay the grapes in a large stone jar holding about thirty gallons: the mouth should be narrow so that the grapes will not touch each other; fill the spaces between them with millet; cover closely with a stone cover well fitted and cemented. Over this paste a thick paper, and let it be hermetically sealed so as to enitrely exclude the air. In this air-tight jar the grapes ripen fully, and acquire a flavor seldom attained by any other method and are preserved for two years in the best condition.

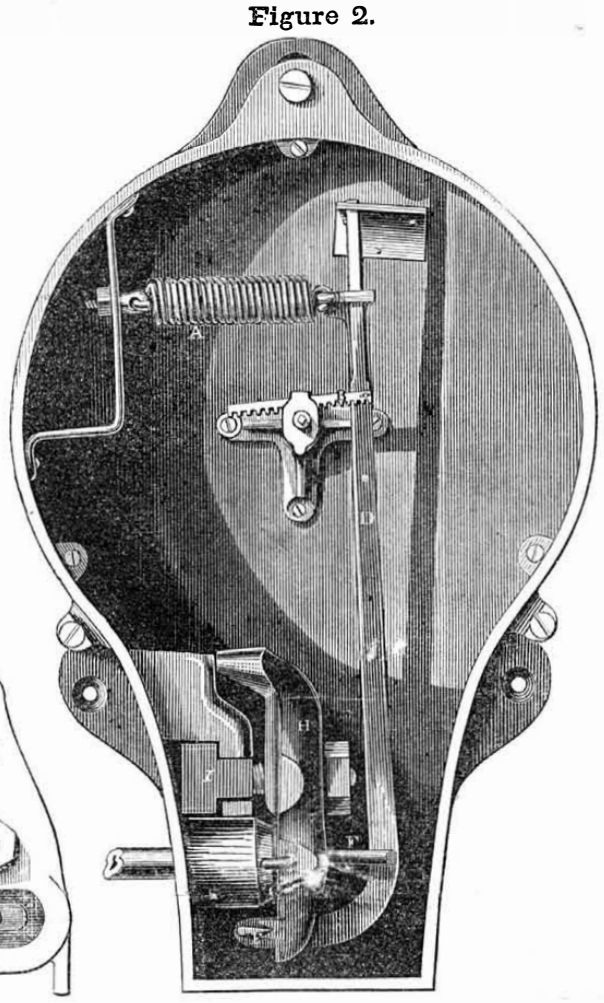
A New Anasthetic Agent.

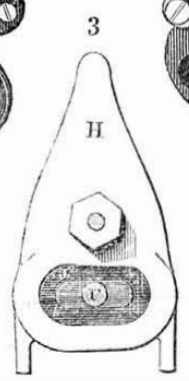
From a report of a recent meeting of the London Medical Society, it appears that a new anæsthetic material has just been discovered, but whether it is superior to chloroform or other agents remains to be ascertained. It consists of the common puff-ball, an indigenous fungus in this country, and was detected by a Mr. Richardson, whose attraction was called to it by the fact that in some localities it is a common practice to stupify bees with it before extracting the contents of the hive. The mode of administration is to burn it while in a dried state, and to cause its fumes to be inhaled.

EASTMAN'S STEAM GAUGE.

Figure 1.

Figure 2.





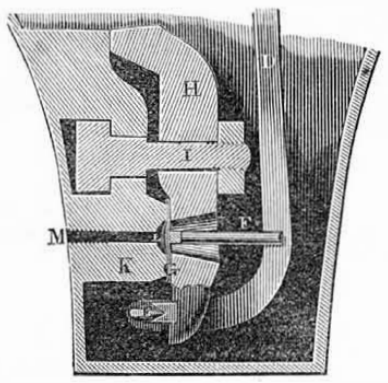
The annexed engravings are views of an improved gague for steam engines, invented by J. L. Eastman, of East Boston, Mass., who has taken measures to secure a patent for the same.

Figure 1 is an outside front view; figure 2 is a view of the interior of the gague; figure 3 is a front view of the button and elastic cushion seat; figure 4 is a section of the lower part of figure 2. The same letters refer to like parts.

The front view merely shows the dial plate with the index around it, marked from 0 to 130; and the pointer or hand, according to the number at which it points gives indication of the pressure of steam in the boiler to which the instrument is attached. The gauge consists of a small iron box like the one represented, and may be placed either close to or at a distance from the boiler, such as the counting house in a factory or foundry, or in the captain's office of a steamboat. A is a coiled spring firmly secured at one end by a nut to a bar fastened to the case. It is secured at the other end to the working lever, D; B is a small rack attached to this lever; it gears into a small pinion (not seen) the axis of which is also the axis of the pointer or hand of the dial plate. The action of lever D, sideways, moves the rack, B, and the pinion mentioned, and consequently the pointer on the dial. This lever, therefore, is actuated by the steam and moves the rack to the right farther from the pinion spindle according as the pressure of the steam increases, and vice versa.

K is a small close steam chamber into which the steam pipe at M (as shown in figs. 2 and 3) from the boiler enters; H is a metal block or button firmly secured by a screw bolt, I, to form a seat to the small steam box, K, and a fulcrum for the spring lever, D, at E, wheer the foot of the lever is made sharp and is held in a notch made in the lower part of the said button; F is a stem on the lever, D; J is an aperture in the button, and G is a cushion of prepared india rubber, attached to the stem, F, covering the aperture at cavity, L, between the passage, M, and the aperture, J, in the button. This idia rubber cushion, G, is secured between the end of the chamber, K, and the inside of the button, H. The steam, therefore, pressing upon this elastic cushion, will actuate the lever, D, through the stem, F, according to its pressure, and thus operate the rack, B, and consequently the index hand on the dial plate. This guage in construction and operation is simple and durable, and will be easily understood from the engravings and the description given. Such gauges are made with dials ranging for different pressures as required, such as one kind for 40 lbs. pressure, another for 100 lbs., another for 130, and another for 200 lbs.

Fig. 4.



This is a spring gauge, the operation of which is not due to an expansion of metal, but simply the pressure of the steam acting upon an elastic medium through which it operates the indicating lever. It is this much different from the Salter Balance, that the lever is not operated by a movable valve, which oftentimes becomes so fixed in its seat that no dependance can be placed upon it.—The elastic cushion having the butt of the stem, F, of lever, D, bearing upon it, is acted upon by the pressure of the steam through the passage, M, in precisely in the same manner as the leather bag "at the bottom of the portable barometer" is acted upon by the pressure of the atmosphere on the mercury. These gauges are sold by the inventor in Orleans street, East Boston, Norris Gregg, & Norris, Gold street, this city, (N. Y.) and Scaife, Atkinson, & Okely, Pittsburgh, Pa. We are not able to give the prices of such gauges, but further information may be obtained by letter addressed to Mr. Eastman.

Steam Power on Farms.

The Marquis of Tweedale has succeeded perfectly in working plows by steam power. The distinguished English agriculturist, Mr. Meche, in a late article, says, "there can be no doubt but that very shortly every agriculturist must use steam power if he is to stand his ground in the race of agricultural competition. The want of it is already felt if not seen, by those who have not the means or inclination to use it. The time is approaching when a steam engine on a farm will be as common as the drill or threshing machine, although like them, it has to pass through the ordeal of disbelief, doubt, and prejudice. A committee of the Royal Agricultural Society give the most extrordinary accounts of the rapid introduction of farm locomotive engines, during the last three years.

Back Numbers Wanted.

If any of our subscribers or local agents have copies of Nos. 48 and 49, present volume, which are not wanted, they will greatly oblige us by returning them to this office. Four cents a copy will be paid for all numbers returned in good condition.

The yellow fever is still very fatal in New Orleans, and the cases exceedingly numerous: far the week ending the 6th inst., there were 1,277 deaths.

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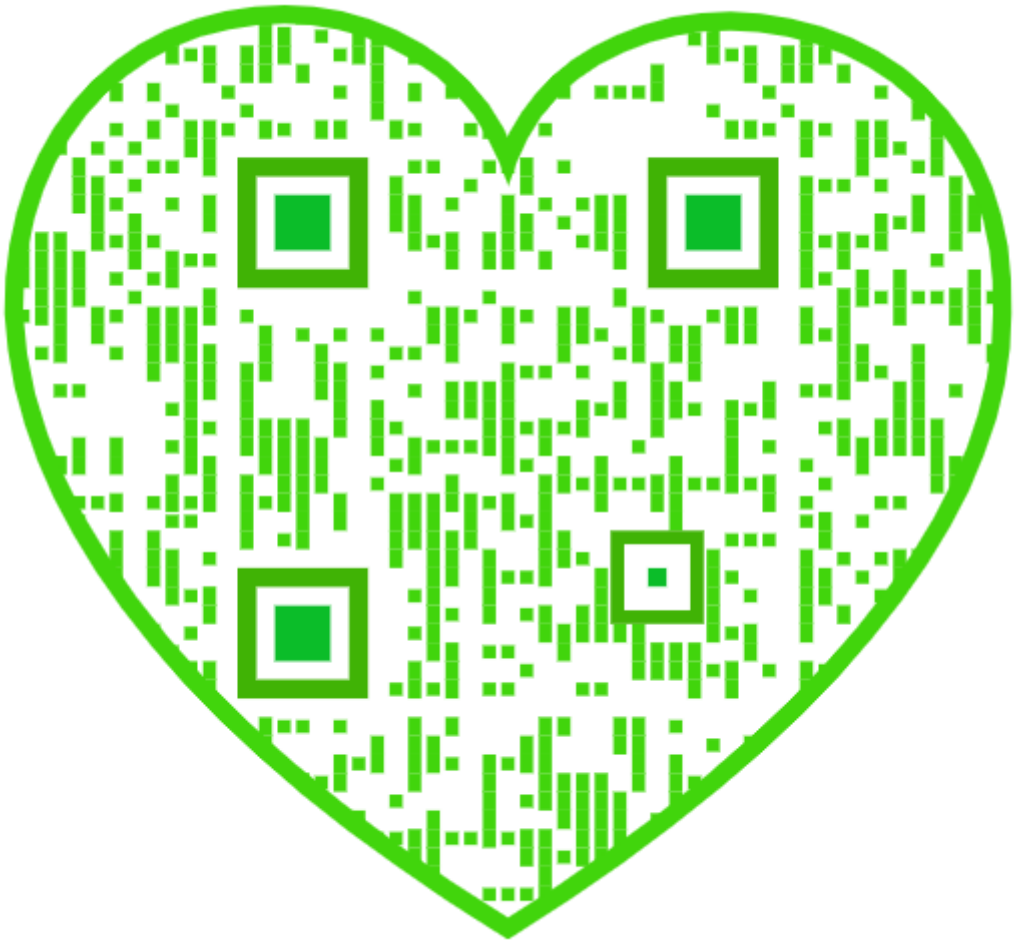

THE CRYSTAL PALACE

GENERAL REMARKS—We intended to present the affairs of the Exhibition in the order of the classes fixed upon by the Association: but we soon found the plan impracticable, chiefly from the fact that the classes have been filled so slowly, precluding the possibility of a just comparison of articles. We presume, however, that the "omnium gatherum" method which we have adopted will, in the end, prove satisfactory enough to our readers. We wish ta present everything useful or interesting that we can learn about the Exhibition.

The past week will be memorable for the interest and value of the contributions brought in. Among the most notable of these are tapestries and porcelain from the French Imperial manufactories; statuary from Greece and Italy; a few miscellaneous articles from Spain, and Power's "Greek Slave," "Eve," "The Fisher Boy," and "Prosepine." The value of articles received during the past week will probably exceed $200,000. The space in the main building is nearly all occupied, and the picture gallery and machine room are fast filling up. Early in September the Exhibition will be in its glory. The daily average number of visitors since the opening has been about 4,000.

A few machines have been placed in position in the Arcade ready for operation.—Among these are Chichester's machines for preparing and dressing flax, and several beautiful steam engines. Mr. Holmes, the Superintendent, intends to try the capabilities of the engines by means of the Dynamometer.

MANNER OF EXHIBITING—The wisdom and taste which many of the exhibitors have displayed in the arrangement of their wares, are much to be admired. Those who use the Exhibition as a means of advertising, if their manufactures are truly worthy and marketable, will never have cause to regret their outlay of money and trouble in decorating the space allotted to them. People go to the Palace expecting to be interested, and unless there be something extraordinary about a well-known article, they will hasten away from it. Jacknives and crockery may be seen anywhere, and if put up here on shelves, as in a country store, although most admirable of their kind, would only provoke an impatient smile. But tastefully or ridiculously displayed in circles, stars, and pyramids, and they attract a wondering crowd. Genin's hats would scarcely be honored with a question or a look, if hung on pegs in a corner; but his enterprise, so lavish of money and taste, almost make the ticket-hero worthy of the conspicuous place he occupies on the main floor almost under the dome.

If there is any peculiar excellence about an article, in its appearance, mode of manufacture, or practical fitness for use, all the visitors would like to find it out, and with the least possible trouble. Most of the visiters have time only to hurry through the building, and if anything is put up for them to read they wish to be able to do it as they run. No one will pause over some of the miserable scratching in the Palace without vexation. As the model of an article well exhibited, we do not hesitate to name the "Francis Life Boat;" it is in a good place—you can get on all sides of it—and by the plain inscriptions on it, and the pamphlets attached, you can learn all about it. People like to know who the exhibitors are—sometimes wish to see them or their agents, in order to make inquiries about their manufactures. We wish all the exhibitors would feel it for their interest to be in person in the city, or to be represented here by agents from whom information might easily be obtained.

LEATHER—In the French Department is a large display of leather: Ch. Knodier, Strasbourg, exhibits "a variety of dressed skins," which look very well. From the inscriptions upon them we copy the following, verbatim: "Patent Tanned Leather—New process of tauning leather almost instantaneous et superior to any known hitherto. It gives in thirty to fifty times less time a produce of much finer color, softer, heavier, and more waterproof. A. Barbier, Agent;" "Calf 8 minutes," "Horse 3 days in summer, 4 days in winter." "Boot legs in cow leather 6 days in summer, 8 in winter." "Calf 2 days in summer 3 in winter." We have our doubts about this new process; we have not been able to get any reliable information. If there is anything in it we will apprise our readers at the earliest day. M. Barbier at present is not in the city.

CURIOSITIES.—There are a great many "curiosities" in the Palace—enough to furnish a respectable museum, and about many of them, at any time, you may see admiring crowds of little folks, or of older people, who come to see the marvellous. Anything very big, or very little, or very odd in any way, is looked at with the greatest wonderment and satisfaction. Very few will go away without vexing their eyes in fruitless attempts to distinguish the tiny parts of the Lilliput steam engine, or in squinting through a microscope to read the Lord's prayer engraved on a three-cent piece and on a gold dollar, in Old English characters. Peculiarly the delight of the juveniles are the Brobdignag razors and knives,—architecture and statuary in soap and wax—the model (done in sugar-candy) of Greenwich street on the arrival of the emigrant train; the wax baby rocking by machinery, and Capt. Gulliver besieged by the Lilliputians. And older people need not be ashamed to look at such things. With so much that demands studious examination, we need something to refresh us, and we would be willing to have a great deal more of the amusing, We would especially like to hear music in the Palace. Why don't they wind up those beautiful music boxes in the Swiss Department? Why don't they get a grinder for the mechanical piano? Or bring in a hurdy-gurdy from the street? And we would not be sorry to have something there to laugh heartily at—one thing even so utterly but ingeniously ridiculous or absurd as to provoke "skreems of lafture." There is no sound philosophy that scorns a laugh. The bow is not always bent.

We intend, in the course of a few weeks, to devote a page exclusively to the description of "curiosities" in the Exhibition.

CRYSTALIZATION—In any part of the city you may have visible evidence that there is a Crystal Palace in town: hundreds of stages and cars, by their ensigns and banners, proclaim that the Exhibition is the center of attraction. You may see the Palace lithographed, painted, engraved, and daguerreotyped in all the styles and sizes. Two newspapers (one of them a tolerable imitation and copy of the Scientific American), on the prestige of the Exhibition, are floating on to wealth and glory—or their proprietors think so. The Crystal Stables are opened, "large bread" can be purchased at a Crystal Bakery; and on the docks the other day we had an *opportunity* of drinking "Crystal Palace ice-cool lemonade—one cent a glass."

GOOD EXAMPLES—On Friday last the proprietors of the New Jersey Locomotive and Machine Co. treated the men in their employ to an excursion to the Exhibition. On the day previous the hands in Colt's Pistol Factory had the same good fortune.

THE THORWALDSEN GROUP OF CHRIST AND THE APOSTLES—These statues are exhibited by Edward Beck, Danish Consul at New York. Owing to the limited space which could be spared, the group cannot be shown to advantage; but except in this respect the arrangement is admirable. The statues are the originals of Thorwaldsen—and until they were replaced by marble, were standing in the Metropolitan Church in Copenhagen. The figure of Christ is colossal, and to produce the effect intended by the sculptor, should stand about fifty feet from the group of Apostles. No christian man will go away content without lingering about this wonderful master-piece of the great sculptor of modern times.

Undoubtedly the most striking feature of the Exhibition, to Americans at least, is the statuary; many thousands will have an opportunity for the first time of convincing themselves that sculpture is one of the most noble of the fine arts.

HOE'S PRESS—On page 362, we made the remark that Hoe's Lightning Press was not to be at the Exhibition because, as we were given to understand, a sufficiency of room could not be obtained for it. This the Superintendent, Mr. Holmes, informs us is not correct. No application for room was made by Messrs. Hoe, or all the facilities and room required for its operation and display, would have been cheerfully granted.

THE GOBELIN TAPESTRIES.—The American people have now an opportunity of seeing something peculiarly royal. The manufacture of Gobelin Tapestries seems to be a royal prerogative. They are made only in government workshops, and for royal use. Plebean wealth may purchase anything to adorn its mansions but the imperial tapestry.

The tapestries exhibited at the Palace we understand were executed by the order of Louis Napoleon to adorn the Elysee. The largest is about eight feet by ten or twelve. They are elegantly mounted on frames and have the appearance of beautiful paintings.—The expense of a single piece varies from ten to thirty thousand dollars. Next week we shall give some account of the history and mode of manufacture.

PORCELAIN.—The "Celestials" boast of knowing everything that is worth knowing,—and there were many "outside barbarians" who thought that all knowledge and art might be found within their wonderful wall. They would make us believe that gunpowder, the mariner's compass, and printing, had their origin in the Flowery Land. But since there has been an opportunity to examine these boastful pretensions, it is found that the Chinese are quite contemptible, and that the Outsiders are indebted to them for almost nothing except tea, a good market for opium, and a name for porcelain household dishes. The Chinese seem to have been half made and perfected in that state about three thousand years ago.

Porcelain is not, as commonly supposed, a Chinese invention, but was probably of very ancient Egyptian origin; but since about the Christian era, has been manufactured in China, and till the 17th century almost exclusively. The China ware was introduced into Europe early in the 16th century, by Portuguese traders, to whom we are probably indebted for the name "porcelain." This beautiful ware excited a great deal of attention and curiosity, but without chemistry its possession was of little avail for solving the mystery of its manufacture. For a long time it was supposed to be composed of eggs, and sea shells which had undergone a preparatory burial of some centuries in the ground. The secret was kept in the possession of the Chinese till the beginning of the 17th century. A cunning Jesuist missionary succeeded in evading their watchful vigilance, and sent home some specimens of the earths from which the ware was made, with a circumstantial and tedious account of its manufacture. But the Priest was not a practical man, and omitted so many of the essential facts that the Europeans were but little wiser than they were before. However, attention was again called to the subject, and the new attempts were successful.

Saxony was the birth-place of European Porcelain, and Francis Boettiger the lucky potter. Boettiger, while an apothecary's clerk, turned his attention to alchemy; he soon became famous and acquired the reputation of possessing the philosopher's stone. Such a dangerous and enviable man could not escape the vigilance of kings, and he was confined in a castle to make gold for the royal treasury. He made no gold, of course, but in his vain experiments he noticed that his crucibles became glazed in a peculiar manner, and the happy thought came to him that he might have a better success in searching for the secret of the China ware. His first attempts were only partially successful, for he could not obtain the pure whiteness of the Eastern manufacture. About this time it happened that a certain merchant, named Schnorr, found a curious white earth near Schneeberg which he introduced into the manufacture of hair powder, as a substitute for wheaten flour. Boettiger had his wig dressed with this new powder—noticed its increased weight—discovered that the powder was an earthy matter, and guessed that it was the long-sought material for the white ware: he tried it, and was completely successful. Thus commenced, in the year 1709, under the direction of Baron Boettiger, the celebrated manufacture of Dresden China, which is continued at the same place to this day. The buildings at first were guarded like a stronghold, with a draw-bridge, lowered only at night; and the workmen were sworn to observe "secresy to the grave," which was the motto constantly before their eyes, affixed to the doors of the workshop.

The valuable secret was kept for about thirty years, when some of the workmen, yielding to temptation, sold their knowl dge and skill to other masters, and porcelain potteries were established in many of the German States.

Early attempts, in France, were made to imitate the Dresden China, and porcelain works were soon erected at St. Cloud Sevres, and other places. But the ware was far inerior to the German, till an accidental discovery of an abundant supply of porcelain earth was made in a ravine near Limoges. The wife of a clergyman had collected some of it to use in bleaching linen; but her husband, suspecting its real value, took it to Bordeaux, and on trial it proved to be the very thing so much needed. From this time the Sevres Porcelain, already celebrated, acquired a renown, constantly increasing, for its hardness and extreme beauty.

England, since its subjugation by the Romans, has been noted for its potteries, but till about the beginning of the 18th century, their products were only of the coarsest description. Salt glazing, a great improvement, was introduced about this time, and shortly after, white stone-ware, in which powdered flints are used. The popular account of this las invention is quite curious. While travelling to London in the year 1720, a potter by the name of Astbury had occasion, at Dunstable, to seek a remedy for a disorder in his horse's eyes, when an ostler at the inn, by burning a flint, reduced it to a fine powder, which he blew into them. Astbury observing the beautiful white color of the flint, after calcination, instantly conceived the use to which it might be applied in his art. Wedgewood ware, famous and used in all parts of the globe, was invented by Josiah Wedgewood, of Staffordshire, in 1763. But England has not been distinguished for her manufactures of porcelain of the finer kinds: English porcelain is inferior to the French, particularly in hardness, the power of enduring heat, and in ornamentation.

In the United States comparatively little has been done in porcelain manufacture, although there are several localities where the materials may be procured.

The chemical constitution of porcelain is quite similar to that of glass; the essential ingredients are pure flint or silex, and white clay or alumina. The name silicate of alumina expresses its composition. Porcelain is colored by means of the metallic oxydes—the oxydes producing the same colors as with glass.

The mode of manufacture is pretty generally understood to be quite similar to that of common earthenware. The materials are first sought of the greatest purity and whiteness—reduced to an impalpable powder—thoroughly mixed with each other, and brought to the plastic state by the addition of water. The shape is given by means of a lathe, mould, or the hands. The vessel is then slowly and carefully dried, and finally baked at an intense heat in an oven.

In the Exhibition the display of porcelain and earthenware is very extensive and satisfactory—and well shows the state of the manufacture at the present time. France, England, and the German States are the chief competitors. A tolerably accurate estimate of their relative merits may be formed from inferences easily drawn from the history of the art and the well-known characteristics of the different nations. In the French ware we should expect lightness, gracefulnass, and excessive ornamentation; in the English and German—strength, massiveness, and boldness. The French make things to look at, but the Saxons to endure and to use.

When the Sevres porcelain, which has recently been received, is opened, we shall return to this subject.

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(For the Scientific American.)
Madder and Indigo.

I have noticed that you have endeavored to direct the attention of our cultivators to the raising of madder and of indigo.

MADDER, to afford a beautiful and permanent tint, must be raised in a soil containing a large portion of calcareous earth, the more the better. The Dutch madder does not afford so beautiful a color, nor is it as permanent as that raised at Avignon, in France. The soil on which the latter grows contains fifty-six per cent. of fine limestone, the former not more than ten per cent. Madder raised in the non-calcareous soil of Alsace, gives a color of no permanency or beauty; but when raised in soil containing more than ninety per cent. of lime earth, the roots give faster and more beautiful dyes than that of Avignon.

The natural soils of Kentucky and Illinois would produce madder of very superior quality. About the year 1817, when in Kentucky, I used some madder raised in their gardens, and it proved to be of excellent quality. It requires three years to bring madder to perfection, and I am afraid this will prevent our cultivators from growing it, as few of them would be willing to wait that time for returns. They might, however, plant beds every year, and after the first three years have annual crops.

Madder is raised in narrow beds, about four feet wide, for the convenience of keeping it free of weeds—an operation necessary to the perfection of the roots. In Kentucky they let the shoots grow to about one foot high, when they lay them down and cover them with soil, and these form new roots. This may be repeated two or three times in their summer season. Those laid down the first year make good roots for consumption when dug at the end of the third season. They leave a good space between each bed to afford soil for covering the shoots. At the final digging, roots of the size of a goose quill are laid by for grinding, and the smaller ones are transplanted.

To prepare madder for market, it is necessary to stove-dry the roots and grind them, and these operations require considerable outlay, and experienced operators. In grinding, the outside cuticle is first taken off, and this forms what is known in the market as "mull-madder," which is only used in dyeing blacks, bottle-greens, and dark browns. The next layer taken off is known as "gamene," and is used for a great variety of common colors. The third is known as "ombre," and the fourth as crop or "grappe." Either of the last may be used for red dyes; but the crop gives the most beautiful color.

Madder roots are imported from Smyrna to England, called Palestine madder, which are ground in London.

There are two colors extracted from madder, when boiled, a red and a dingy yellow; but when the red alone is required the liquor must be kept below a boiling heat.

INDIGO.—Indigo is an annual crop; it is cut when at maturity, placed in a steeper, then covered with soft water, and stones placed on the plant to keep it under the water. It remains steeping until the liquor becomes of a greenish yellow, with a copper colored scum round the outside. The liquor is then drawn into a receiver, and the workmen beat it with long poles to oxydize the green faecula, which will then precipitate as blue indigo.

About the latter end of the year 1799, or the beginning of 1800, I owned a large dyeing establishment in the west of England, consuming about four hundred pounds of indigo per week. At the date above mentioned I went to London to lay in a stock for the blue vats; among the lots offered were two chests made in South Carolina, on the Peedee river, by the late General Wade Hampton. On examining them I found it of a deep rich copper color, clean and smooth in the fracture, and as it was offered at one shilling per pound cheaper than Bengal of similar quality, I bought them with several of the latter; and as I expected, the quantity of coloring matter extracted from the South Carolina, was greater by at least ten per cent. than from the Bengal.

I emigrated to this country in the year 1808, and the following year I wrote to Gen. Wade Hampton to know if he continued to make indigo and to inform him of the superiority of the two chests I had used. In his answer he informed me that he had given up the making of indigo, because cotton planting paid better, and that indigo making so injured the health of his slaves that some of them never recovered their previous strength. The injury he complained of is produced during the beating process; for so rapid is the absorption of oxygen gas from the atmosphere, during the operation, that those who stand over it must be breathing an air with its vital principle so diminished as to render it unfit to sustain animal life. This difficulty might be easily obviated by letting the liquor from the steep run into a receiver, shorter and narrower than the lower one, with a cullender bottom made of zinc, and through it dripping into the lower one called the beater. It would require three or four feet between the two. I believe, by this process, the green faecula would be more completely oxydized, and a better quality of indigo produced than by beating.

Those who prefer the old process could restore the strength of their slaves by the following simple operation:—let them procure a twelve gallon graded gasometer, and convey into it for every three gallons of atmospheric air one gallon of oxygen gas; by breathing this increased vital fluid a few times, the whole of the carbon that had increased in the blood from breathing a non-vital gas, would pass off, and strength be restored.

WM. PARTRIDGE.

Binghamton, N. Y., 1853.

[We hope our agriculturists and planters will give the above communication a faithful consideration. The Bengal indigo monopolizes our market, as the first quality.—[ED.

(For the Scientific American.)
The New Steamboat Law—Its Success in the West.

In the "Scientific American," of the 6th inst., R. G., complains of neglect of duty of the Steamboat Inspectors of New York in not inspecting ferry-boats, &c. If the writer had read the new Steamboat Law with any attention, he would have seen that by the 42nd section it is provided "that this act shall not apply to vessels of the United States, nor to vessels of other countries, nor to steamers used as ferry-boats, tugging boats, or vessels under 150 tons, navigating canals." In your remarks you seem to have fallen into the same error. My object is to correct you, and at the same time to say these vessels should undoubtedly have been subjected to the law, for there is as much danger to life upon ferry-boats and canal passenger boats as upon any other class whatever.

I was in Washington at the time of the passage of the law, and although it was the desire of the framers of the bill to include these vessels, yet it was considered impossible to get it through the House, and even extremely doubtful if any bill would pass owing to the great opposition of Mr. Vanderbilt and others, and they were forced to take the law in its present shape rather than none. At this session of Congress, however, these vessels by all means should be included in the law, and it is hoped they will not be passed over.

I feel some little pride in alluding to the success of the new law, and having devoted considerable time and attention in its passage, and as I thought had been somewhat instrumental in spreading correct information before the public, as to the cause of explosions and the proper remedies to prevent them, I cannot but look back with pride at the good results upon its provisions.

If you will look at the facts in the case, taking for example the Mississippi River and all its tributaries, I believe you will find that from the 1st of January, when the law took effect, to this time, there has not been the loss of life of a single passenger, or even an injury to one, upon all these waters, whilst in the seven months of 1852, corresponding to these, there were over 500 persons killed. Taking the explosions and accidents elsewhere in the United States for the same period, they scarcely amount to anything in comparison with the loss before. With the exception of the explosion in California and Texas, I am not aware of but one instance in our whole territory where passengers have lost their lives.

The great cause of complaint, it seems to me, is the making this law a matter of politics. As I ever understood it, this was a law demanded by the necessities of the occasion and for the benefit of the whole American people; it was for the security of life, not for the aggrandisement of party. I do not believe there was, during the passage of the bill through Congress, one single voice in favor of ever making this a political question, in fact, Whigs, Democrats, and all others, were united on this question, and publicly and privately disavowed any intention of the kind. The late President acted upon this principle in the appointment of Supervising Inspectors, yet the "powers that be" have already removed some of the most deserving and filled their places with those who have no kind of knowledge of the business over which they are to exert such an important influence. In the 8th and 9th Districts neither of the Supervising Inspectors, it is said, can go on board of a steamer and stop the engines to save their lives.

AN ENGINEER.

To the Manufacturers of Hoes.

The hoes which have been in general use for a number of years, for chopping out and working bottom lands, are the kind known by the name of "patent hoe." This hoe has a steel blade with the eye rivetted on to it. Before it can be used, however, for the purpose stated, it is heated and bent down, so that the blade describes a curve, and is not set at right angles (as when bought) to the handle. This setting, almost invariably loosens the rivets of the eye, and therefore injures the hoe. In consequence of this an inferior hoe is coming into use and has the preference? Could not these patent hoes be bent to the proper angle by the manufacturer? I have never seen a new one properly made. I hope this will attract the attention of those most interested in the making of them. J.

Powelton, Ga.

[There are some beautiful hoes on exhibition at the "Crystal Palace." The manufacturers of such hoes, if they possess the proper mechanical skill, can make them of the proper shape for the purpose spoken of by our correspondent: there is no mechanical difficulty to prevent them.—ED.

Recent Foreign Inventions.

DYEING.—Louis J. J. Malegue, of Paris, patentee.—The inventor prepares his coloring composition for dyeing rose color thus:—Four ounces of ammoniacal cochineal are dissolved in a quart of hot water and boiled for ten minutes, after which 88 grains of salt of tin, 140 grains of crystals of tartar or bitartrate of potash, 1 oz. of saturated aqueous solution of sulphurous acid, and 140 grains of the solution of tin are added; the whole is then boiled for about half an hour and then allowed to cool in a glass or earthenware vessel, and afterwards decanted into another vessel. Two ounces of the carmine of safranum are then added, and well mixed with the solution. A small quantity of this composition is then mixed with a quantity of hot water, and tartaric acid is added in the proportion of about 1 oz. to 8 or 10 gallons of water, and then an additional quantity of the dye added sufficient to produce the required rose-tint.

The solution of tin above mentioned is formed by dissolving 9 parts, by weight, of pure tin in 5 parts of nitric acid and 18 parts of muriatic acid.

The ammoniacal cochineal is produced by boiling finely ground cochineal in twice its weight of solution of ammonia for several hours. The mixture should be well stirred, and when it becomes thick it should be placed upon a cloth stretched on a piece of wicker work and dried in a stove, and then cut or broken into pieces.

The salt of tin is prepared by dissolving pure tin filings or grains in muriatic acid, to which has been added one-fifth part of its weight of nitric acid, and then evaporating the solution in a water-bath till the solid salt is obtained.

For dyeing purple the process is the same, with the exception that 350 grains of solution of tin are employed instead of 140, and 1½ oz. of carmine of safranum instead of 2 ozs.

BALLOONS.—J. H. Johnson, London.—The apparatus specified under this patent consists of a balloon of an elongated form, from which is suspended a platform or frame to carry the propelling, directing, and governing machinery, and the aeronauts. There are four wheels fixed at the extremity of two transverse parallel shafts, set in motion by a small steam engine, which, with its boiler, is placed in any convenient part of the frame, and a number of wings extending from the shafts of these wheels, for the purpose of counteracting the effect of the air against the balloon; on each side of the platform is an apparatus similar to an umbrella or parachute, which, by alternately opening and closing, exerts a propelling power. A series of horizontal wings, form a means of regulating the ascent and descent of the balloon, and sliding weights are used, by which the centre of gravity of the whole can be changed, and its angle of inclination determined. The balloon is furnished with a rudder similar to that of a ship, by which its course through the air may be governed.

The Leviathan Steamship.

Mr. Betts, the great railway contractor, who has just left for Montreal, is a Director in the Eastern Navigation Company, who are constructing the Leviathan Steamship, for the purpose of facilitating ocean navigation. The other head of this company is the Earl of Yarborough, and the names of Mr. Peto and others of equal note, are also associated with Mr. Betts in the direction. This Company has laid the scheme for a monster steamer, whose dimensions are given as follows:—Length 673 feet; breadth 80 feet; out to out of wheel-houses 120 feet; depth of hold from combinings of main deck 60 feet; power of engines 6,000 horse. Her decks present an area of 1½ acres of surface. The ship is being built by Scott Russell, Esq., the greatest naval architect of England, and is constructed in separate compartments, made water-tight, so that in case of her bow or stern breaking off, she would still be able to float in separate pieces. It is doubtful if such a steamer could enter our harbor, and Halifax is therefore regarded as the most suitable port for this new move in ocean navigation. This steamer is to sail from Milford Haven, where she is now building—or from Holyhead Harbor, which promises eventually to become the great steamship terminus of the British Isle.——[London paper.

[So it seems this great steamer is actually *being* built. Well, we would like to see it, the experiment is certainly a magnificent one. In connection with the above, we learn by the "Montreal Herald," that Robert Stephenson, the celebrated engineer who built the Britannia Tubular Bridge, is now in Montreal to build a tubular bridge over the St. Lawrence.

Sea Sickness.

A writer in the "London Times" says:—"Having noticed in the public journals a recent instance of death from sea sickness, under very painful circumstances, I am induced to hope that the mention of a remedy which was entirely successful in a case which came under my own observation may be useful to other sufferers from the distressing malady.—A lady of my acquaintance was landed at the Cape of Good Hope on her voyage home from India, in such a deplorable state of debility and exhaustion from sea sickness that she was obliged to be carried into the house by men, and would certainly have died if the ship had been a week longer at sea. The danger of renewing the voyage under such circumstances was very great, but a simple contrivance enabled her to continue it, and to reach England in perfect health. A swinging cot was constructed with a top or frame over it, fitted with curtains so as effectually to screen the deck overhead, and other parts of the vessel, from the view of the recumbent invalid.—The motion of the ship was thus rendered imperceptible, and the invalid being relieved from the dizzying effect of the vessel appearing to roll one way and the cot the other, no longer felt any nausea or inconvenience. She soon gained sufficient strength to leave her cot for short periods, except in bad weather, and the confinement, such as it was, was a trifle compared to that which persons who have lost or dislocated limbs, are compelled to endure pain for months. At all events life was saved, and health restored by this simple means."

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NEW INVENTIONS.

Cast-iron Interior Walls.

L. A. Gouch, architect, Harlem, N. Y., has shown us plans for cast-iron partition walls, which appear to be far superior in every respect, and can be put up for less than those of brick. They are formed of perforated plates bolted together, each of about one-sixteenth of an inch in thickness, and secured so as to make a partition of four inches in thickness, having an air space between, which will answer for ventilation, gas pipes, water pipes, and hot air pipes. These plates can be covered with plaster and made to resemble a hard-finish wall. These partitions will be fireproof, and flanges are cast upon them for joists and beams of flooring and stairs. Such a partition can be taken down at any time, by merely unscrewing the bolts, and not like brick, mortar, and lath walls, it will be as good as ever, and can answer the same purpose a thousand times over, and last for a thousand years. The application of iron to architecture is an invention which should attract universal attention.

Improvement in Knitting Machines.

Israel M. Hopkins, of Pascoag, R. I., has taken measures to secure a patent for an improvement in machinery for knitting various kinds of goods. One part of the improvement relates to a certain means of causing the locking bar to descend and lock the "sinkers" firmly, previous to the commencement of the retreat of the needles and the closing of their barbs by the presser bar, whereby, after the depressions of the thread are made between the needles by the sinkers, the passage under the points of the needles is more effectually secured, and thus any dropping of the loops in the knitting (not an uncommon evil) is prevented. Every time a row of loops is added to the piece that is being knit, there is an arrangement for drawing the thread tight at the selvedge, and thus make a much better fabric.

New Spoke Machine.

Anson Judson, Jr., of Unadilla, N. Y., has taken measures to secure a patent for useful improvements in machinery for cutting spokes for carriage wheels, and for articles of a similar nature. The nature of the improvements consist in cutting the stuff into the proper form for spokes by planing it longitudinally with a double set of revolving cutters which receive motion and cut with the grain of the wood. This machine is a spoke planer, as the stuff does not revolve. The cutters are so formed that as the stuff is fed in side guides, to direct the cutter stocks, that at one part the cutters by their form will plane nearly flat, and then as the work proceeds the rounding edges of the cutters are brought into action. The side guides to direct the cutters to act upon the stuff to be planed are of such a form that while the cutters revolve they are made to cut the several portions of the stuff to the required form. When one side of a spoke is finished, it is turned and the other side is submitted to the same action.

Sawing Machine.

W. D. Carr, Senr., and W. D. Carr, of Corning, N. Y., have invented an arrangement of the cross-cut saw, by which it may be operated by a single man. The saw-frame or carriage is placed upon horizontal ways, which rest upon the block or log to be cut. The saw is fed to its work by means of weighted rods at each extremity, passing loosely through the carriage. A reciprocating motion is given by a crank and rod. Measures have been taken to secure a patent.

Improved Capstan.

An improvement in Capstans has been made by P. C. Bryant, of Camden, Me., who has taken measures to secure a patent. The capstan may be used as a common capstan, and changed at once so that a far greater leverage can be obtained by interior gearing, but which, as a consequence, requires longer time in operation. This capstan, we believe, will be exceedingly useful, especially for vessels which have small crews, who sometimes have very heavy weights to elevate.—The capstan occupies no more room, and has the very same appearance as the ones in present use; the machine which is added to effect the object stated, consists simply of some bevel pinions and one bevel plate wheel.

Burglar Alarm.

D. C. McDougall, of Springfield, Mass., has invented a contrivance for the purpose of sounding an alarm when a door or window is "tried" or attempted to be opened, which he terms a Burglar Alarm. The alarm is given by an explosion of a percussion cap, struck by a hammer ingeniously loosened by the motion of the door or window. Measures have been taken to secure a patent.

FARMERS' HEATING AND STEAMING APPARATUS.

Figure 1.

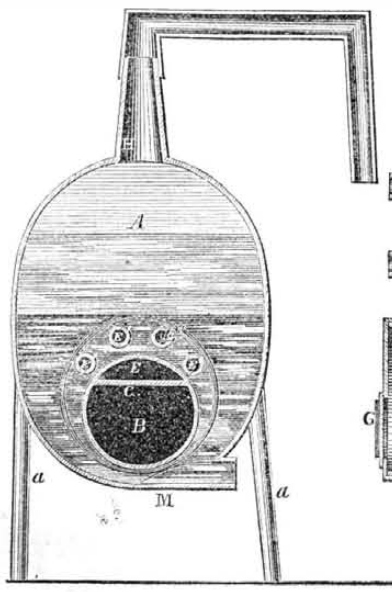
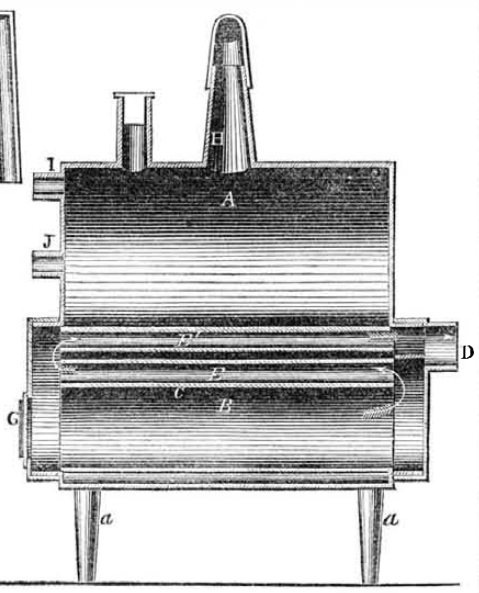


Figure 2.

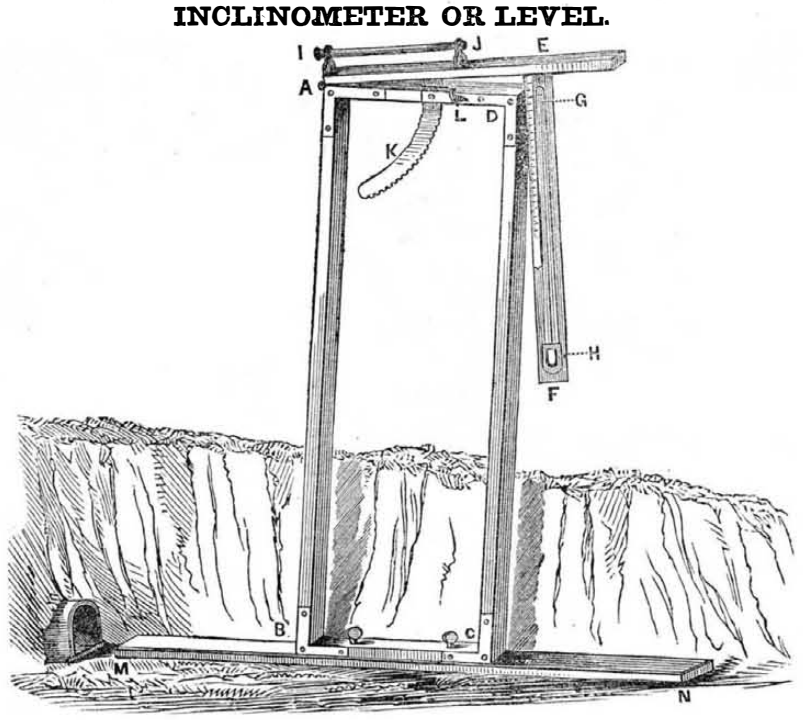


The annexed engravings are views of an improved apparatus for farmers for heating and steaming purposes, devised by Jesse Neal, of Hudson, Summit Co., Ohio.

Figure 1 is a vertical transverse section of the apparatus, and figure 2 is a vertical longitudinal section. The same letters refer to like parts.

A is an elliptical boiler or water chamber mounted on legs, *a*; B is the furnace; C is a partition, and E is a flue; E′ E′ E′ E′, are four tubes around the furnace flue. The heat passes from the fire in the directions of the arrows, thence out at the smoke pipe, D; G is the door of the furnace, through which the fuel is fed to the fire; H is a pipe which conveys the steam from the boiler by branch tubes to heat up vats of milk for making cheese, or for heating tubs of water, or boiling feed for cattle; I J K are test pipes for stop cocks; L is the safety valve; M is a blow-off pipe for running off the water when desired. This heating and steaming apparatus as noticed by us last week is principally designed for farmers, especially those who make much cheese and butter, when the milk has often to be heated, and the cattle provided with steamed food. All the vessels, excepting this one, to be heated, even highly boiled, can be made of wood, and thus at but a small expense. This is one great advantage in employing a steam boiler for boiling other vessels. The steam pipes in the wooden vessels can be laid on the bottom and inserted into the one that branches from this boiler. Low pressure steam, perfectly safe, can be employed, and no more than seven pounds required to be placed on the safety valve. The boiler may be fed by a hand pump, or by a reservoir, consisting of a cask of water placed above the boiler at 7 feet, which will exert sufficient pressure to feed in when the steam is at 7 lbs. As stated by us before, Mr. Neal has applied for a patent, and more information may be obtained by letter addressed to him.

INCLINOMETER OR LEVEL.



This engraving represents a simple instrument recently designed by W. Gillespie, of Torbanehill, Linlinthgowshire, Scotland, for the purpose of facilitating the formation of a drain to carry off the water from the foundations of his house. The circumstances of the case demanded especial exactness and uniformity of slope, and the quantity of water to be removed was very considerable; for on going down 2½ feet, it was found that the house was actually standing on a hydrostatic bed. This accumulation of moisture was to be discharged by a drain, sunk direct 5½ feet at the very door-step. Commencing at such a depth, it was, of course, essential to guide the slope with accuracy, so as to preserve the outfall at the other extremity; and it was evident that any misdirection might endanger the house by causing the unpleasant result of back-water. During the progress of the work, Mr. Gillespie being dissatisfied with its appearance, conceived the idea of this apparatus. The instrument is nothing more than a parallelogram of timber and a plummet, in combination. The engraving shows it as pointing out the slope of a line of drain pipes. From the nature of the parallelogram, A B C D, it is obvious that the top, A D, must be parallel with the base, B C; and to show the deviation of the upper of these coinciding slopes from the level, the instrument is provided with the means of determining what the true level is. It has a duplicate top, A E, hinged to the angle, A. The other extremity of this duplicate top being a little protracted is formed into the well-known T-square by insertion through a slit (in which a slight range is given to accommodate the working of the implement) of a depending limb, E F, at right angles to A E. E F is graduated downwards for several inches in sixteenths of an inch. The face of the depending limb is likewise grooved for the reception of a plummet, G H, or pendulum of wire playing upon its graduated front. A quadrant, K, moved by turning the ratchet-pin, L, is employed to elevate or depress the duplicate top spar, A E, until the plummet rests from its oscillations, in exact accordance with a vertical line drawn from the face of the T-square. This shows the top spar, A E, to have been adjusted to the proper level. On the other side of the implement, behind the ratchet pin, will be found an inverted pinch or pressing screw, by turning which backwards, the implement is set, and the square top fixed on the horizontal or true level.

The limb, A E, being now upon the level, whilst the limb, A D, still continues to indicate the slope, the difference intervening betwixt the level and the slope is necessarily denoted on the graduated scale, which being fixed upon the inner edge of the plummet style, measures the exact rate of slope to which the instrument is applied. I J is a light telescope for extending the range of the level. By means of it, the out fall or depth of slope can be determined throughout any distance within the scope of vision, and the heights of objects may be measured where their distances can be ascertained. M N is an extra base bar, protracting the slope, and giving the rate of it with greater certainty of precision.

We learn by the "Glasgow Practical Mechanic's Journal," in which the above instrument was first illustrated, that it is now in established use for road and drain making.

State Room Railroad Car.

Messrs. Eaton & Gilbert, of Troy, N. Y., have built a beautiful car for the Hudson River Railroad, which is divided into state rooms of eight feet square. The car is 45 feet long and 9½ wide; each room is calculated for a family or a party, and is furnished with one sofa, four chairs, a looking-glass, and small centre-table. The panels are painted in landscape, the ceiling hung with silk, and the floor richly carpetted. The rooms are entered by a side passage, and each is well lighted and ventilated. There is a wash-room in the front part of the car. Altogether, it is designed to meet the wants for which separate state-rooms are provided on our steamboats. It is the first experiment of the kind, we believe, upon any railroad in our country, and if successful, more cars of the same kind will be provided for this line, and other railroads will also adopt them. We are doubtful about the experiment paying yet, but it will do so before many years pass away. A family or party will not pay an extravagant price for a separate room, when the journey is only for a few hours, but they will do so, if they have to travel for a number of hours at once.

Railroad Verdict.

The Coroner's Jury, in the case of the Providence and Worcester Railroad collision, noticed by us last week, have brought in a verdict thus: "the said accident was the immediate result of culpable carelessness, inexperience, and want of judgment of F. W. Putnam, the conductor of the Uxbridge train." This man is quite young, had a poor borrowed watch, and had only $30 per month of wages. The Company showing, by their *liberality*, the care they had for passengers' lives. The jury also decided that "the whole management of the trains on said road was bad, and that there was no necessity for one crowding upon the time of another." We hope the managers of this railroad will be made to pay for their mismanagement.

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Scientific American

NEW-YORK, AUGUST 27, 1853.

Let Knowledge Increase.

On not a few occasions we have heard persons vainly boast of the *quantity* of books they had read; *we* place a higher estimate upon that intellect which makes *quality* the touch-stone of excellence. There are persons who can chatter a string of nonsense twenty-four hours long—speak against time—but twenty words spoken by a sensible man is of more value than all they say in a whole day. There are books, "of the making of which," as Solomon said, "there is no end;" but of the prodigious quantity which have been published, those of sterling merit form a very small proportion to the number ot useless ones. Of the readers of books and periodicals what shall we say? Do the majority read to derive pleasure by increasing their knowledge? Do they seek the teaching of Truth with gladness, or prefer to recline on the lap of Fiction? To the latter question an affirmative, and to the former a negative answer must be returned. It is a sad truth that twenty works of fiction are read for one of fact; this is not very flattering to human dignity. For all this, however, we believe that knowledge is spreading, and that there is a growing desire for it. Some appear to have an exceedingly vague idea of what knowledge is—to such we say, it is simple truth—nothing more and nothing less; there is no knowledge apart from truth.

In our experience, since the Scientific American commenced its career, we have had opportunities of knowing something of an improving taste, and a spreading desire for useful information by many and in many places, where such desires and tastes were not before displayed. We know that myriads derive much pleasure from reading works of fiction—and the majority perhaps always will—and some of these works answer a very good purpose; but we know that the pleasure derived from reading useful works is more solid and lasting, and produces substantial benefits. A taste for useful reading, even if dry, can be acquired and it would be well if every person would cultivate this taste, for the judgment pays it reverence. We sincerely desire, independent of business considerations, to see knowledge increasing; and in endeavoring to extend the circulation of the Scientific American, our feelings are enlisted for the spread of useful information, because we know it does benefit, and in no case can do injury to the people.

"Knowledge is power," and he who is without it at the present day, is like a sheep among wolves, an idiot among sages. Those, especially men in business, unless they read reliable and useful works connected with the progress of science, art, and invention, are continually liable to be imposed upon by plotting Dousterswivels and speculating pretenders.

To Our Readers.

Those of our constant readers who have so often and so kindly assisted to extend the circulation of the Scientific American by recommending it to their friends, we know, at this time, will once again put their hands to the plow and break a new furrow, for the reception of the good seed, which has always raised good fruit to both old and young.—Those of our later subscribers, indiscriminately, also to friends to the cause of science, art, invention, andtruth, we have no doubt will do much for the spread of useful information, and the benefit of their fellow men.

Will our friends read the chapter of *suggestions*, and also the new Prospectus, in other parts of our paper, and endeavor to get as many of their acquaintances as they can who are not subscribers to become so at as early a date as possible. We have offered some very excellent prizes, respecting which we will only say at this time, that those who solicit subscribers need not blush, but take pride in recommending a paper which is devoted to truth in art and science, and which is entirely different from any other in our country.

Table Moving, Spirit Rappings, and Science.

We have received a letter from one of our constant readers—J. A. Taft, of Irvine, Pa.,—in which he takes exceptions to the conclusions of Prof. Faraday, an abstract of whose experiments we published on page 355. It will be recollected by our readers that Faraday established two things by his experiments, 1st. That the turning of a table by persons sitting around it, with their hands joined and resting on the top, was not due to a current of electricity developed by the bodies of the experimenters. 2nd. That it was caused by the hand pressure of the operators, the mind directing the pressure, and consequently the table's direction." Mr. Taft says he has seen a table moved with himself upon it, and raised nearly six feet high. He has seen it moved when no one was moving it, and has known of a bell (in the dark though) lifted from a table, rung, and thrown across the room. He has also seen many other tricks performed, all done by the spirit of a person named Dunn, well known in that community, who was a very tricky chap while alive, but who, it seems, has become more devilishly tricky and expert since he died.—He has also known of correct messages being received by the spirit rappings, and he can produce good vouchers for the truth of all he writes about. We certainly do not doubt but Mr. Taft believes all that he asserts to be true, and do not require any vouchers, but he asks the following question: "I would like to have some one give a scientific explanation of the thing," and to this we will give an answer, and also make some remarks to the following extract on the same subject, taken from a recent letter ot Judge Edmonds, of this city, published in the Courier and Enquirer. Judge Edmonds in his letter says:—

"We are taught that none of these extraordinary things which are witnessed by so many are miraculous, or flow from any suspension of nature's laws, but are, on the other hand, in conformity with and in execution of those laws; that, like the steam engine and the magnetic telegraph, they are marvellous only to those who do not understand them, or are not familiar with them, and those laws, and the means by which they produce such results are as capable of being found out by human research, that the knowledge is not confined to a few, but is open to all, rich or poor, high or low, wise or ignorant, who will wisely and patiently search for it."

To Mr. Taft we will merely say that he asks a very unreasonable question. If he believes that the spirit of Dunn performed the cantraps, why does he ask a scientific explanation of them. If he is convinced that a spirit performed them, he has his explanation. Scientific men have dealings with the material universe only, and they should not be asked spiritual questions. The Judge is a distinguished lawyer, and although he should, it is very evident that he does not know what a "law of nature is, nor does he seem to have a knowledge of the laws which govern the motion of inorganic bodies. A law ot nature is a mere operation of matter. Thus an apple thrown upwards will always return to the earth, and this we say is according to the law of gravity, by which larger bodies attract or draw smaller ones to them. We know nothing of *a law of nature* independent of the operations—the action—ot matter, and the results must always be uniform. If these spirit rappings and table movings are in conformity with the laws of nature, like *the steam engine* as Judge Edmonds asserts, then the results will always be uniform and he can tell us, and everybody, how such operations can be seen, heard, or felt—displayed—by every person and in any place. If *these extraordinary things* are according to nature's law, Judge Edmonds can give the rules for convincing the public. Neither the telegraph nor steam engine require either reasoning or sophistry to prove their identity—they convince without argument.

The "New York Tribune" has given expression to some very unreasonable ideas respecting scientific men investigating and giving an explanation of such phenomena. The first law of science in respect to inorganic bodies, is that "no body at rest has power to move of itself; nor ot itself, when in motion, to change its direction." This is the law of inertia; we therefore say, a table at rest cannot move of itself, consequently those who say they believe such extraordinary things as table moving, &c., are produced by spirits, present evidence of their own doubts, when they ask for a scientific explanation of them. We do not believe that a disembodied spirit has the least power to operate matter; if it has, then the responsibility of living men must be greatly circumscribed, especially if a spirit gets into a steam boiler; it might explode the boiler, and wrongfully we might blame the engineer for carrying too much steam. The ridiculous stuff published in many papers as the doings of disembodied spirits, such as the nonsense in the Hon. Mr. Talmadge's letter, about our Cato Calhoun's spirit playing on an accordeon, is enough to make fools blush for human credulity. We have never seen a table move without some known power moving it, neither do we know anything about the rappings, because we have considered them beneath our attention. If these *extraordinary things*, however, are in conformity with nature's laws, as Judge Edmonds asserts—like the telegraph and steam engine, about which we know something—we can easily be convinced of error, and proven to be mistaken; at present we are blue and buff skeptics.

Mechanics' Institutes, and Mechanics Calumniated.

'It is pleasing to listen to the conversation, not merely the attempt to show off, by some conceited, half-instructed disciple of a Mechanics' Institute, with his smattering of everything and knowledge of nothing, volubly and eagerly explaning what he does not understand—one whose accent and language bespeak him "North o' the Tweed."

[The above is an extract from the "New York Daily Times" of the 17th inst. It is taken from the Dublin correspondent's letter o that paper, who makes the above slurring remark in his description of the "Dublin Exhibition." It is very evident that he looks upon a mechanic as an ignorant egotist, and this egotism he attributes to the teachings of Mechanics' Institutes. Education has no doubt a refining influence, but neither an education at Oxford, in England, Trinity in Dublin, or Yale in America, can make *a man* of sound judgment, and extensive information. There are many men who leave college complete ignoramuses respecting *knowledge*,—which is facts well-arranged. This is no doubt owing to the kind ot professors, under whom they were educated. Every man ought to be estimated by his real worth, and not by the cut of his coat, or the tone of his voice. The men who have been taught in Mechanics Institutes have done more for Ireland than those who have been taught in her Universities; the very Crystal Palace in Dublin exists only because a working man of limited education—a self-made one—willed it. The great men of the world have neither been made by colleges nor mechanics' institutes. These institutions are mere aids to form the man. Shakspeare nor Burns were college bred, but Milton and Pope were.—The best artists ot America and England were not raised in college halls. It is a positive fact that nearly every one of our American painters and sculptors, dead and living, cannot be called *educated* men, but well informed men, which many college-educated men are not. The greatest engineering works in Ireland were carried out by your Mechanics' Institutes' men, such as Thos. Telford, and instead of sneering at the graduate of a mechanics institute, the person who wrote the above would greatly benefit his head and heart if he would place himself for some time under such instruction as he might find in some Mechanics' Institutes that we could name.

Scientific Men Misrepresented.

"There was a *scientific* man who published a book to demonstrate that steam power could never drive a vessel across the Atlantic Ocean, and just as the book got out of the press, a steamer came steaming along at the rate of three hundred miles per day, and others have been at it at the same rate ever since, and the scientific book has gone to the oblivious stream."—[Extract of Col. Benton's letter to C. Street, on the Pacific railroad, published in the "National Intelligencer"

"It is asserted that Dr. Dionysius Lardner, whose fame has extended over the civilized world, demonstrated to a nicety the impossibility of crossing the ocean in a steamer.—His redoubtable arguments and his inevitable conclusions did not, however, prevent the appearance of the English steamer 'Syrius' at the docks of New York. Practical men with a thousandth part of Dr. Lardner's scientific acquirements were satisfied—the Dr. to the contrary notwithstanding—that there existed no insurmountable impediment; and the consequences we see in the splendid 'lines' that now cross the ocean with the regularity of terry-boats."—[Journal of Agriculture, (Boston) for August.

[If Col. Benton and the editor of the "Journal of Agriculture" had been careful readers of the "Scientific American," they would not have made the above mistakes, for the Colonel doubtless refers to Dr. Lardner.—He never published a book to demonstrate the impracticability of a steamer crossing the Atlantic Ocean, nor did he ever make an assertion to that effect, it has been attributed to him, and has floated along down time, and through a thousand careless newspapers, but it is not true. On such subjects we regret to say, that we often find many of our leading men very defective in historical knowledge; they speak and write in such a manner as would lead us to conclude that they derived the most of their information from unreliable papers. Dr. Lardner distinctly affirmed the very contrary of what has been attributed to him in the two foregoing paragraphs, as any person can find out for himself by consulting pages 295, 6 and 7, of Lardner's work on the "Steam Engine, Navigation, and Railways."

Events of the Week.

Gold Machinery.—We have just received a letter from J. W. Cochrane, of this city, the inventor of the gold quartz crusher which was illustrated on page 364, Vol. 7, Scientific American, who is now in London with one of his machines grinding gold quartz shipped from California. He is convincing the most skeptical that he can take gold quartz in lumps of 30 cubic inches, and with the aid of two men he can pulverize and amalgamate no less than forty tons of it per day. The whole expenses for labor and steam power does not cost over one shilling sterling per ton. He challenges any other machine for $25,000 to equal it. He is receiving orders for Australia, California, England, and Spain. He believes that Buffum's Amalgamator, which was also illustrated in our last volume, to be without a superior. He asserts that the quartz and mercury should never be ground together; and the reason he gives for entertaining this opinion is, that in grinding the mercury is finely subdivided, mixed with the sand, washed away in the water and lost. The grinding and amalgamating, he asserts, should be performed by separate machines, entirely different in their nature and action.

Water Tanks of Locomotives—On page 348, this Volume of the "Scientific American," we noticed an improvement in the construction of locomotive water tanks, invented by A. W. L. Rivers, of Charleston, S. C. The "New York Railroad Journal" noticed the improvement, and said it was not new—that it had been tried on the New York and Erie Railroad, and it was found to possess no advantage. We have received a letter from Mr. Rivers on the subject, and in it he says, "his tank has been successfully tried, and is now used on the South Carolina Railroad, and the Superintendent, N. Darrell, Esq., a man of experience and ability, wishes that all the tenders on the road were built on the same plan." He is positive that the water tanks of the tenders on the Erie Railroad, were differently constructed from his.

Sewing Machines.

The American Sewing Machines noticed in the "Glasgow Chronicle," and other papers in Scotland, as attracting considerable attention, extracts of which were inserted in the Scientific American two weeks since; are understood to be the machines made by Grover, Baker & Co., of this city.

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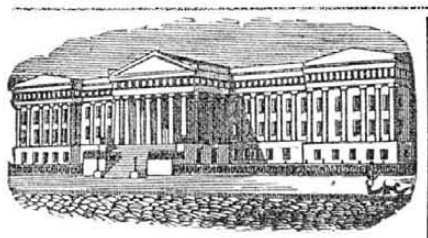

Reported Officially for the Scientific American.

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING AUG. 16, 1853

BEDSTEAD FASTENINGS—By G. W. Baynes, Thos. Hinty, & Minter Jackson, of Glenville, Va.: We claim the combination and arrangement of the te nons, A A, pins, E E, tenons D and F, with a screw, for the purpose set forth.

MEAT TENDERERS—By Wm. Beach, of Philadelphia, Pa.: I claim forming a meat maul for the purpose designed, by securing to one end of an oblong block of wood, whose opposite end is formed into a handle a series of rows of tapered teeth of the form described, cast on a plate or driven singly into the wood, as may be desired.

HINGES FOR FOLDING BEDSTEADS—By John Binder, of Chelsea, Mass.: I claim the method described, of constructing a hinge with the circular bearing surfaces, as set forth.

GUN LOCKS—By P. F. Charpie, of Mount Vernon, Ohio: I claim connecting the dog to the hammer by means of a screw passing through a curved slot in the plate, in combination with the packing which encompasses the curved slot, by which combination I am enabled to place the mainspring and dog on the inside of the lock plate, and prevent the admission of moisture within the lock, as set forth.

[See notice of this invention on page 298, Vol. 8, Sci. Am.]

PRINTED CARPETS—By Thomas Crossley, of Roxbury, Mass.: I claim as a new article of manufacture, a single ply printed carpet, made by combining the warps and filling, in the manner described, and subsequently printing them on one or both sides; I having discovered that fabrics woven in this manner could be printed on one or both sides without the colors passing through and discoloring or intermingling with the colors on the opposite side of the fabric.

RUDDER BRACE—By B. F Delano, of Chelsea, Mass: I claim, first, the brace connected with the rudder, as described and set forth.

Second, I claim the combination of the brace, with the elliptical tiller, or any other analogous device, for the purpose of actuating the rudder by the application of power to the braces instead of to the rudder itself.

FACING BUILDINGS—By M B Dyott, of Philadelphia, Pa.: I claim the method described, of supporting a veneering or facing of thin cast iron or other plates upon their inside, and uniting the same firmly with the external surface of the building, by so fixing the plates in relation to the wall as to leave a sufficient space between them, to allow a cement in a liquid form to be poured in to fill the space and all the interstices of the plate perfectly, solidify around and upon the hooks and other fastenings, exclude the air and all dampness, whereby the veneering is strengthened, protected, and preserved, as set forth

MACHINES FOR PREPARING SPOKE TIMBER—By A. W. Graheart, of Beallsville, Ohio: I claim the arrangement of the adjustable bed, the bridle or clamp, the sliding guide or gauge, and foot lever, for the purpose set forth.

SOCKET FOR AUGER HANDLES AND BRACES—By A. H McKinley, of Higginsport, Ohio: I do not claim the enabling the shipping or unshipping of a bit or auger from its stock or handle; but I claim the peculiar arrangement of mechanism by which I enable the shipping and unshipping of the bit and handle of an auger or other boring tool, that is to say, the socket having a circular head and vibrating cap, whose aperture can be made at one position to coincide with the mouth of the socket, and in the other position to oppose its straight edges to the projecting corners of the shank, the cap being retained in the desired position by spring and notch, as described, or its equivalent.

DRAUGHT APPARATUS OF SEED PLANTERS—By Jacob Mumma, of Mount Joy, Pa: I claim the combination of a tongue, having motion vertically and laterally, with the directing and supporting wheel, as set forth.

DROP HAMMERS—By E. K. Root, of Hartford, Ct.: I do not wish to limit myself to the special construction specified, so long as the same effects are produced by equivalent means

I claim the method of elevating the drops or hammers by means of a screw having a continuous rotary motion in combination with the mechanism, or its equivalents, for disconnecting the drops or hammers from the screw to permit them to drop, as described

I also claim the method of disconnecting the drops or hammers by the rotation of the elevating screw which is notched to catch and act upon the finger, or its equivalent, connected with the slide, to force it back and clear the thread of the screw, as specified.

I also claim, in combination with the slide which connects the drop or hammer with the elevating screw, and with the finger on the slide, or their equivalents, the employment of a catch lever or its equivalent for holding up the drop or hammer, when it is liberated from the elevating screw, and there to hold it until it is required to be dropped, as described

Lastly, I claim, in combination with the slide which forms the connection with the elevating screw, and with the catch that holds the said slide when liberated from the elevating screw, or their equivalents, the employment of the rebound latch, which liberates the parts by the rebound when the drop or hammer strikes, as specified.

TRIP HAMMER—By Wm. Van Anden, of Poughkeepsie, N Y.: I do not claim elevating the hammer shaft by means of cams; neither do I claim the friction rollers, irrespective of the particular manner of arranging or attaching them to the hammer shaft, as shown.

But I claim, first, attaching a collar to one end of the hammer-shaft, said collar working loosely over a shaft which has a spring attached to it for the purpose of forcing down the hammer shaft; the shaft being provided with a set screw, or its equivalent and lever, arranged as described, by which, upon properly adjusting said set screw, or its equivalent, the hammer may be made to descend upon the block or anvil with greater or less force, as described.

Second, I claim the employment or use of the friction rollers attached to a vibrating frame, arranged as shown, for the purpose of relieving, instantaneously, the cams from the pressure of the rollers, when the highest points of the cams have passed the lowest centers of the rollers, thus preventing the wearing of the cams at their highest points, as set forth.

[See description of this invention on page 204, Vol. 8, Sci. Am.]

BREECH-LOADING FIRE-ARMS—By J. P. Schenkl (assignor to J. P Schenkl & A S. Saroni,) of Boston, Mass.: I do not claim uniting the breech to the barrel by means of right and left screws, portions of which are cut away to enable the one to enter the other, the two being secured together by a partial revolution of one of them, as this has been done before.

But I claim the combination of parts for the purpose of operating the movable breech constructed and operating as described.

HILL SIDE PLOWS—By W. H. Babbit, of Waynesburgh, Pa.: I claim constructing and arranging head in the hinge which connects the beam of the plow with the upright, so as to lock said hinge by means of a bolt before the pivot of said hinge, and by a lever behind said pivot, for the purpose of making the bearings in said hinge adjustable, as set forth.

SCREW WRENCH—By A G. Coes, of Worcester, Mass: I am aware that the movable jaw has been moved by means of a screw, I do not claim such to be my invention, but I claim the combination and arrangement of the screw tube, its external and internal screws, the screw on the shank, the annulus, and its left screw, as applied to the sliding jaw, the whole being made to operate together, as set forth, enabling a person to readily move the sliding jaw on the shank with a velocity compounded of the velocities of motion of two left screws on two right screws, as described.

SHIP BLOCK—By Wm. & S. G. Coleman, of Providence, R I: We claim the described mode of constructing the hook and eye staple of the ship's block, and supporting it within, and by means of the cheeks without, any extension of it around and in contact with the sheave pin, and whether each of the sheeks is made whole or in two parts, as specified, and in combination therewith we claim the mode of sustaining the sheave pin, and connecting the two parts of each cheek, viz, by a metallic rod extended through them, and directly under and against the sheave pin, as specified.

MACINERY FOR PEGGING BOOTS AND SHOES—By A. C. Gallahue, of Alleghany City, Pa. Ante-dated Feb. 18, 1853: I claim, first, the sliding lever, having a hook thereon for entering the staple of the last, which, passing through slots in the uprights of the turn-table, secures the last to said table, by the introduction of the wedge, as set forth.

Second, I claim the turn table mounted on the sliding table, which works on ways upon the moving table, and is actuated by springs, for the purpose of keeping the edge of the sole at all times in contact with the gauge, when this is combined with mechanism for giving the turn table a semi-revolution at the point where its center is brought opposite the awl, by the motion of the table, that regularity in inserting the pegs may be secured.

Third, I claim the combination of the spring, lever, catch, or their equivalent, sliding wheels, racks, miter wheels, by which a semi-revolution is given the turn table (while the pegs are being inserted around the heel) by the shifting of the cog wheel from rack 7 into 6, on the release of the lever from the catch, and the return of said cog wheel into the rack 7, on the release of the spring from the catch, by which means it acts on the upper side lever, as set forth.

Fourth. I claim the cam and rod, secured to the hammer and helical spring, by which a graduated driving stroke is given the awl and its rod, in combination with cam 2 rod H (upon which slide the hammer), and helical spring, by which a driving stroke is given the peg driver alternately with that of the awl and its rod; it being understood that I do not claim the general feature of a hammer and rod carrying an awl, and spring for driving the awl operated by a cam, as this has been done heretofore, but the particular mode or combination in which they are used, as claimed.

Fifth, I claim giving the peg tube and driver a side motion, independent of the awl and awl rod, by means the cam and lever, or their equivalent, for the purpose of bringing the peg directly over the hole punched in the sole of the shoe by the withdrawn awl, as set forth.

Sixth, I claim the combination of the cam and stirrup, with the swung peg cutter, by which the peg wood is split with the grain of the wood from below, by the knife, and at the same time forced in the tube, it being understood that I do not claim the general feature of a peg cutter forming one side of the tube through which the peg is drawn, but only the particular mode of applying it as claimed

OVEN DOORS OF COOKING STOVES AND RANGES—By Gibson North, of Philadolphia, Pa: I claim the application of an adhesive coat of enamel or other substance answering the same purpose, to the inside of the oven doors of ranges or cooking stoves, as described.

BOAT OR SCOW—By A. R. Tewksbury, of Boston, Mass.: I claim the method of constructing a boat, viz, by attaching its sides and ends to its bottom by water-tight hinges, in combination with connecting the edges of the sides and ends by water-tight flexible gores, as described, so that the boat may be unfolded, or the sides and ends be turned down into the plane of the bottom, thereof, as explained.

DISCHARGING BREECH LOADING FIRE-ARMS—By Henry Stanton, U. S. A.: I claim the method described, of firing the charge of breech-loading arms by the breech itself, in the act of closing, thereby dispensing with the ordinary lock, and greatly simplifying the construction of arms and diminishing correspondingly their cost and liability to get out of order, and increasing their durability and efficiency.

I also claim the method of igniting the charge by shearing through the fulminating compound attached to the cartridge, as set forth.

DESIGN.

COOKING STOVE—By J. W. Van Cleve (assignor to James Greer & Co.), of Dayton, O.

Who Feeds England.

England is so deeply engaged in manufactures, that she brings a large portion of her breadstuffs and provisions, as well as the raw materials for her manufactures, from every part of the world. During the first twenty-seven weeks of the present year, the importation of flour and wheat alone, into the ports of Great Britain was equal to 16,104,752 bushels wheat. This quantity was brought from forty eight different ports, in all climates. The list begins with the northern port of Russia, (Archangel) and ends with Peru. It includes almost every European State—includes Egypt and the west of Africa, the Phillippine Islands and the Brazils, Australia and the United States of North America.

American Association for the Advancement of Science.

[Continued from page 390.]

INDICATIONS OF THE WEATHER AS SHOWN BY ANIMALS, INSECTS, AND PLANTS.—A very interesting paper on this subject was read by W. B. Thomas, of Cincinnati.

"When a pair of migratory birds have arrived in the spring, they immediately prepare to build their nests, making a careful reconnoisance of the place, and observing the character of the season that is coming. If it be a windy one they thatch the straw and leaves on the inside of the nest, between the twigs and the lining; and if it be very windy they get pliant twigs and bind the nest firmly to the limb, securing all the small twigs with their saliva. It they fear the approach of a rainy season, they build their nests so as to be sheltered from the weather. But if a pleasant one, they build in the fair, open place, without taking any of those extra precautions.

But insects and smaller animals furnish us with the best means of determining the weather.

Snails do not drink, but imbibe moisture in their bodies during a rain. At regular periods after the rain they exude this moisture from their bodies. Take, for example, the "Helix Alternata;' the first fluid exuded is the pure liquid. When this is exhausted, it then changes to a light red, then deep red, then yellow, and lastly to a dark brown. The Helix is very careful not to exude more of its moisture than is necessary. It might exude it all at once, but this is not in conformity to its general character, as this would prove too great an exertion. The Helix alternate is never seen abroad, except before a rain, when we find it ascending the bark of trees, and getting on the leaves.

The Helix, Arborea, Identata, Ruderati, and Minuta, are also seen ascending the stems of plants two days before a rain. The Helices Clausa, Ligera, Pennsylvanica and elevata generally begin to crawl about two days before the rain will descend. They are seen ascending the stems of plants. If it be a long and hard rain, they get on the sheltered side of the leaf, but if a short one they get on the outside. The Luccinea have also the same habits, differing only in color of animals, as before the rain it is of a yellow color, while after it is a blue.

For a few days before a rain, a large and deep indentation appears in the H. Thyroideus, beginning on the head between the horns, and ending with a jointure at the shell. The Helices Solitaria and Zeleta, a few days before a rain crawl to the most exposed hillside where, if they arrive before the rain descends, they seek some crevice in the rocks, and then close the aperture of the shell with glutinous substance, which, when the rain approaches they dissolve, and are then seen crawling out.

The leaves of trees are even good barometers; most of them for a short, light rain, will turn up so as to receive their fill of water; but for a long rain, they are so doubled as to conduct the water away.

The Rana, Bufo and Hyla, are also sure indications of rain, for, as they do not drink water, but absorb it into their bodies, they are sure to be found out the time they expect rain.

The Locusta and Gryllus are also good indicators of a storm. A few hours before the rain they are to be found under the leaves of trees and in the hollow trunks."

RISING OF WATER IN SPRINGS BEFORE RAINS.—An interesting paper on this subject war read by Prof. Brocklesby, of Conn.

"In the westward portion of the town of Rutland, Vt., is a lofty hill, rising to the height of about 400 feet above the Otter Creek valley. Near the summit of the hill a small spring bursts forth, the waters of which are conveyed in wooden pipes to the barn yards of two farm-houses situated on the slope of the hill; the first being about a quarter of a mile distant from the spring, and the second nearly one-third of a mile. At the latter house Prof. B. once resided.

The waters of the spring are not abundant, and during the summer months frequently fail to supply the aqueduct. Such was the state of the spring when he arrrived at Rutland, for the summer had been extremely dry, the brooks were unusually low, and the drought had prevailed so long that even the famed Green Mountain had in many places begun to wear a russet livery. The drought continued, not a drop of rain falling, when one morning the servant, coming in from the barnyard, affirmed that we should soon have rain, as the water was flowing in the aqueduct—the spring having risen several inches. The prediction was verified, for, within two or three days, rain fell to a considerable depth. In a short time the spring again sank low, and ceased to supply the aqueduct; but one cloudless morning, when there were no visible indications of rain, its waters once more rose—flowing through the entire length of the aqueduct—and ere twenty-four hours had elapsed, another rain was pouring down upon the hills. On inquiry, it was ascertained from the residents in the vicinity that the phenomenon was one of ordinary occurrence, and that, for the last twenty years, the approach of rain was expected to be indicated by the rising of the spring.

Interested by these facts he sought for others of the like nature, and requested through the public prints information on this subject from all who happened to possess it,—and also collateral points which were conceived to have important relation to this phenomenon. He was rewarded by the knowledge of only one additional instance, existing in Concord, Mass., where a spring that supplies a certain brook is said to rise perceptibly before a storm. Mr. Munroe, who lives near the stream, afforded the following information:—

"The subject has not, so far as we are aware, fallen under the notice of any close observer of the facts you inquire about; the most that is known being this: that the bed of the brook, during a long drought, having become dry, the stream is known to start again before any rain, and the belief is that rain is to be looked for immediately upon the appearance of Dodge's Brook."

The cause of this phenomenon has been attributed by some, to the fall of rain at distant sources of the spring previous to its descent in the vicinity of the spring itself; but he believed the true solution was to be found in the diminished atmospheric pressure which exists before a rain.

The waters of a spring remain at any given level, because the atmospheric and hydrostatic pressure combined, exactly counterbalance the upward force of the jet. The spring will, therefore rise either when the force of a jet is increased, while the atmospheric pressure continues the same, or when the latter is diminished, while the former remains constant; and the elevation is greatest of all when the decrease in the density of the atmosphere occurs simultaneously with an increase in the strength of the jet.

If the explanation given is correct, we arrive at the curious discoveries that the springs and fountains of the earth are natural barometers, whose indications may, perhaps, be worthy of notice in future physical investigations.

The Great India Rubber Case.

Some inquiries have been made of us respecting the recent Patent Trial India Rubber Case, at Newport, R. I., about which a number of our daily papers have made regular reports without being able to give the least clue to the uninitiated relative to what the trial is about. Some people have thought it not a little strange that Horace H. Day should be the plaintiff in this case, as owner of Chaffee's patent, which was extended by Mr. Ewbank, and against the legality of which extension Mr. Day issued a long manifesto, subscribed by some distinguished lawyers. We would state that the trial is not to test the validity of the patent, but is to settle some bargains connected with the inventor and the owner of the patent.

The cholera is now raging fearfully in some places of Denmark. In Copenhagen, 300 died of it in one day.

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TO CORRESPONDENTS.

V. L. M., of Pa.—Your last invention submitted to us has been longer known (but not in use) than the one suggested to us before. The invention of Dr. Townsend, illustrated on page 241, Vol. 2, Scientific American, describes your last proposition exactly, and the placing of canvas curtains around the edges of the cars and allowing them to drop near the track, is an invention in use on some of our railroads at the present time. So your previous suggestion is not new. The use of curtains as applied on the New Jersey Railroad are very effectual in preventing the dust from rising, and is the best contrivance we have seen for the purpose—the most effectual for the smallest expense. Don't be discouraged—try again—you hit upon one good idea if it was not new.

S. H., of Pa.—you had better send us a model of your improvement for examination.

L. K., of Mass.—The engine and boiler which we have advertised for a few weeks back has been sold.

E. F. F, of Vt.—If you have got an invention on bank bill paper that will render it impossible to counterfeit or alter bills printed upon it you have a valuable answer. Supposing you send us a fifty dollar bill upon some good specie paying bank that is printed upon your paper, that we may have occucular demonstration that what you say of your invention is not overrated.

H. H., of Pa.—We have seen no other account of Fischer's Ram than the one you quote from Ewbank's Hydraulics, page 371. 'One-third,' pobrably should read 'two-thirds.' No hydraulic ram can raise a larger amount of water than escapes, higher than the source. Three milles above Schaffhausen at Lauffen is a cataract about 100 feet in height The basin or air chamber, we should think, was at the base of the altar.

F. W. B, of Ohio.—Can you inform us anything new about Cashart's Turn Table? He appears not to have a patent.

G. Y., of Md.—Your method of preventing steam boiler explosions is quite well understood; no patent could be secured on it, it is an old contrivance.

N. W. P., of Pa.—We do not think there is any chance for you to obtain a patent on the method of securing plastering to brick walls. Our opinion is that it is not the subject of a patent.

R. H. B., of Ohio —The subject of celestial photography is one worthy of attention. We have not made the microscopical examination which you speak of There are sometimes 4 sun dogs seen, as you will find by consulting any good work on meteorological phenomena.

Money received on account of Patent Office business for the week ending Saturday, Aug 20:—

W. McB., of Ohio, $55; L. C., of Miss, $55; W D. C. & Son, N. Y., $25; F. C. & S, of N. Y., $100; G. W. C., of Ga., $25; T. D., of Ala., $15; J. W. S., of Mich., $30; B S, of Ill., $20; N. R., of Ill., $35; G. S. C., of N. Y, $55.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday Aug 20:—

D. B. M., of N. Y; D. W. C. & Son, N. Y.; H. D. M, of Ohio; T. D., of Ala.; G. B. T., of Ohio; G. S. C., of N. Y.

A Chapter of Suggestions, &c.

To Correspondents.—Condense your ideas into as brief space as possible, and write them outlegibly, always remembering to add your name to the communication. Annonymous letters receive no attention at this office. If you have questions to ask, do it in as few words as possible, and if you have some invention to describe, come right to the business at the commencement of your letter, and not fill up the best part of your sheet in making apologies for having the presumption to address us. We are always willing to impart information if we have the kind solicited.

Foreign Subscribers.—Our Canada and Nova Scotia patrons are solicited to compete with our citizens for the valuable prizes offered on the next volume. [It is important that all who reside out of the States should remember to send 25 cents additional to the published rates for each yearly subscriber—that amount we are obliged to pre-pay on postage.]

Binding.—We would suggest to those who desire to have their volumes bound, that they had better send their numbers to this office and have them executed in a uniform style with their previous volumes. Price of binding 75 cents.

Missing Numbers.—Subscribers who have failed to receive some of the numbers during the year, can have them supplied by stating what numbers are missing at the time of remitting for the new volume.

Infallible Rule.—It is an established rule of this office to stop sending the paper when the time for which it was pre-paid has expired, and the publishers will not deviate from that standing rule in any instance.

Receipts.—When money is paid at the office for subscriptions, a receipt for it will always be given, but when subscribers remit their money by mail, they may consider the arrival of the first paper a bonafide acknowledgment of the receipt of their funds.

Patent Laws, and Guide to Inventors.—We publish, and have for sale, the Patent Laws of the United States. The pamphlet contains not only the laws but all information touching the rules and regulation of the Patent Office. Price 12 1-2 cts. per copy.

Back Numbers and Volumes—In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement.—Of Volumes 1, 2 3 and 4—none. Of Vol. 5, all but six numbers, price, in sheets, $1; bound, $1 75. Of Volume 6, all; price in sheets, $2; bound, $2,75. Of Vol. 7 all; price in sheets, $2; bound, $2,75. Of Vol. 8, all the back numbers subsequent to No. 27, but none previous.

Patent Claims—Persons desiring the claims of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office—stating the name of the patentee, and enclosing one dollar as fee for copying

Patentees—Remember we are always willing to execute and publish engravings of your inventions, provided they are on interesting subjects, and have never appeared in any other publication. No engravings are inserted in our columns that have appeared in any other journal in this country, and we must be permitted to have the engraving executed to suit our own columns in size and style Barely the expense of the engraving is charged by us, and the wood-cuts may be claimed by the inventor, and subsequently used to advantage in other journals.

Give Intelligible Directions—We often receive letters with money enclosed, requesting the paper sent or the amount of the enclosure but no name of State given, and often with the name of the post office also omitted. Persons should be careful to write their names plainly when they address publishers, and to name the post office at which they wish to receive their paper, and the State in which the post office is located.

☞The above chapter of variety we have inserted for the mutual benefit of our patrons and ourselves. If our subscribers will retain in mind the suggestions contained in the above paragraphs, they will be likely to be benefitted thereby; besides they will save us much valuable time and a good deal of perplexity.

ADVERTISEMENTS.

URE'S DICTIONARY—NEW EDITION—A dictionary of arts, manufactures, and mines—Containing a Clear Exposition of their Principles and Practice, by Andrew Ure, M. D., Illustrated with sixteen hundred engravings on wood. Fourth Edition. Corrected and greatly enlarged. Many of the articles entirely re written, and many new cuts added. 2 large vols, 8 vo. cloth. D. APPLETON & CO., will shortly issue a new edition of Ure's Dictionary, re-printed entire page for page with the new and greatly enlarged edition just published in England.—Although this work is enlarged to two volumes, comprising in all 2116 pages, the price of the new edition will not be increased beyond the price of the former edition—Five Dollars. The trade and the public are invited to send their orders without delay to ensure prompt delivery of this very cheap and popular work. 200 Broadway, N. Y 49 2

WANTED—The address of a mochinist who understands making machinery for manufacturingg an improved gun lock. I shall want a machine for pressing the hammer, for pressing the dog, for forming the end of the main spring, for punching the slot in the plate, for making and heading the different sized screws required; a drilling machine, and all the necessary machinery for griading and polishing the different parts of the lock; engraving the plate, and, in fact, every thing necessary for the rapid and economical production of said locks, except the motive power. Address WM HENRY, Jr., Wooster, Ohio. 49 3*

ATKINS' SELF-RAKING REAPER—The unequalled success of this machine, both in grain and grass, and the information already received from agents, shows the demand another season will be more than I can supply. Every reaper heard from (about 30 in seven different States and Canada) gives good satisfaction with no drawbacks, though others yet to hear from may have given trouble. Arrangements must be made to supply the demand, and the inventor (Mr. Atkins) would like to realize something from the patent at once, and part of the States may be offered for sale If a satisfactory price cannot be got, then arrangements may possibly be made with manufacturers to build and pay a patent fee. A machine can be seen at the Crystal Palace, and others will be at some of the State and County Fairs this Autumn. J. S WRIGHT.
"Prairie Farmer" Warehouse, Chicago, Ill, Aug. 6th, 1853. 49 5*

COCHIN CHINA FOWLS—I have for sale, by the pair, young Cochin China fowls of the best blood in America, and desirable for their great size, their symmetry, and fine plumage. Address RODNEY L. ADAMS, Lyons, N Y. 50 2*

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48 3* No. 107 Fulton st, New York.

LAWRENCE SCIENTIFIC SCHOOL, Harvard University, Cambridge, Mass. The next term of this institution will open on the first day of Sept., 1853, and continue 20 weeks Instruction by recitations, lectures and practical exercises, according to the nature of the study, will be given in Astronomy, by Messrs Bond; Botany, by Prof. Gray; Chemistry, Analytical and Practical, by Prof. Horsford; Comparative Anatomy and Physiology, by Prof Wyman, Engineering, by Prof. Eustis; Mathematics, by Prof Pierce; Mineralogy, by Prof. Cooke; Physics, by Prof. Lovering; Zoology and Geology, by Prof. Agassiz For further information concerning he School, application may be made to Prof. E N Horsford, Dean of the Faculty.
Cambridge, Mass., July 15, 1853. 44 8*

PALMER'S PATENT LEG—Manufactured by Palmer & Co., at No 5 Burt's Block, Springfield, Mass., for New England and New York State, and 376 Chesnut st, Philadelphia; in every instance of competition in the Fairs of the various Institutes of this country, has received the highest awards as "the best" in mechanism, usefulness, and economy. At the "World's Fair," London, 1851, in competition with thirty other varieties of artificial legs (by the best artists in London and Paris,) it received the Prize Medal as the best. 47 10*

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FOUNDRY FOR SALE—In the village of Westerly, R. I.; location unsurpassed. Sales of castings, for the past 6 months over $14 000. Apply soon (post paid) to C. POTTER, Jr., Agent, Westerly, R.I.
47 4*

COTTON MACHINERY—For sale, very low, viz. 1 30 inch batt card, 1 warper, 2 dresser fans, and 1 iron boiler. Apply to E. WHITNEY, New Haven, Ct. 45 6

NORRIS WORKS, Norristown, Pa. The subscribers build and send to any part of the United States, Pumping, Hoisting, Stamping and Portable Engines, and Mining Machinery of every description THOMAS, CORSON & WEST. 46 1y.

NORCROSS ROTARY PLANING MACHINE,—Decided by the Circuit Court not to infringe the Woodworth Machine—I now offer my Planing Machines at a low price; they are not surpassed by any machines as to amount or quality of work. Tongueing and grooving machines also for sale, doing one or both edges as desired; 80 machines now in operation. Address me at Lowell, Mass.,
39 20* N. G. NORCROSS

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ENGINEERING—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers, and machinery of every description. Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic Self-adjusting Conical Packing, Faber's Water Gauge, Sewall's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, etc. etc.
CHARLES W. COPELAND,
29 26* Consulting Engineer, 64 Broadway.

PATENT LAWS OF THE UNITED STATES, and information to inventors and patentees; for sale at the Scientific American office. Price 12 1-2 cents.

IRON FOUNDRY FOR SALE.—In full operation, twelve moulders employed, and a good run of custom and job work, in a village near New York; always accessible. Address "J. F.," box 1209, New York Post Office 49 2*

ATMOSPHERIC TELEGRAPH—The English patent (just issued) is now offered for sale at the Company's office, 24 Merchant's Exchange. Boston, Mass. I. S. RICHARDSON,
35tf Agent A. T. Company.

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McALLISTER & BROTHER—Opticians and dealers in mathematical instruments, 48 Chesnut st, Philadelphia Pa. Mathematical instruments separate and in cases, Protractors, Spacing Dividers, Drawing Pens, Ivory Scales, Tape Measures, Salometers, Spy Glasses, Microscopes, Hydrometers, &c. &c. An illustrated and priced catalogue will be sent by mail free of charge. 39 6m*

A GOOD CHANCE FOR MANUFACTURING—A Water Privilege of ten feet fall, on a never-failing stream, with four acres of choice land, in the town of Cornwall, Orange Co., N. Y., 5 miles from the North River, and three miles from the railroad depot, and on the line of survey of the Albany and Hoboken RR. For particulars inquire of John J. Vanduzer, 184 Canal st, N. Y., or John Orr, on the premises. 40 13*

NEW METHOD FOR MAKING WROUGHT-Iron direct from the Ore—The proprietors of James Kenton's Patent, who have purchased Alex. Dickerson's patent for the above purpose, are desirous of introducing the invention into general use, and invite parties who may wish to negotiate for rights for States and counties, or for furnaces, to make immediate application, and to examine the furnace which is in successful operation at the American Iron Company's Works, Newark, N. J The invention is exciting considerable interest; gentlemen from all parts of the country, who are engaged in the manufacture of iron, have examined the furnace in its workings, and give it their decided commendation. A circular, giving more minute information, will be sent to those desiring it. The rights for several States and counties have already been disposed of. Applications for rights in the State of New Jersey may address the Hon. J. M. Quinby, President of the American Iron Company. Inquiries or applications for other States may be made to A. B. BROWN, Newark, N. J, Office 107 Market st. 34tf

BEARDSLEE'S PATENT PLANING Tongueing and Grooving Machines—These celebrated machines have now been generally introduced in various portions of the United States. More than thirty are now in successful practical operation in the State of New York alone. As an illustration of the extent of work which they are capable of performing, with unrivalled perfection, it is sufficient to state that, within the last six months and a half, over five millions of feet of spruce flooring have been planed, tongued and grooved by one of these machines at Plattsburgh, N. Y., never running to exceed ten hours a day. The claim that the Beardslee machine was an infringement upon the Woodworth patent, has been finally abandoned; and after the proofs had been taken, the suit instituted by the owners of that patent was discontinued, and the whole controversy terminated on the first of November last. Applications for machines or rights may be made to the subscriber, GEO. W. BEARDSLEE, 57 State street, or No. 764 Broadway, Albany.
15tf

THE NEW HAVEN MANUFACTURING Company, New Haven, Conn., having purchased the entire right of E. Harrison's Flour and Grain Mill, for the United States and Territories, for the term of five years, are now prepared to furnish said mills at short notice. These mills are unequalled by any other mill in use, and will grind from 20 to 30 bushels per hour of fine meal, and will run 24 hours per day, without heating, as the mills are self-cooling. They weigh from 1400 to 1500 lbs., of the best French burr stone, 30 inches in diameter: snugly packed in a cast-iron frame, price of mill $200, packing $5. Terms cash. Further particulars can be had by addressing as above, post-paid, or to S. C. Hills agent N. H. M. Co., 12 Platt st, N. Y. 28tf

MACHINERY.—S. C. HILLS, No. 12 Platt-st. N Y. dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's and Law's Planing machines; Dick's Presses, Punches and Shears; Morticing and Tennoning machines; Belting; machinery oil, Beal's patent Cob and Corn mills; Burr mill and Grindstones; Lead and Iron Pipe &c Letters to be noticed must be post-paid. 40tf

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LEONARD'S MACHINERY DEPOT, 103 Pearl-st. and 60 Beaver, N. Y.—Leather Banding Manufactory, N. Y.—Machinists's Tools, a large assortment from the "Lowell Machine Shop," and other celebrated makers. Also a general supply of mechanics' and manufacturers' articles, and a superior quality of oak-tanned Leather Belting.
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PAINTS, &c. &c.—American Atomic Drier' Graining Colors, Anti-friction Paste, Gold Size, Zinc Drier, and Stove Polish.
QUARTERMAN & SON, 114 John st.,
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LOGAN VAIL & CO., No. 9 Gold st, New York—Agency for Geo. Vail & Co., Speedwell Iron Works, Norristown, N. J., furnish and keep on hand Portable Steam Engines of various sizes, Saw and Grist Mill Irons, Hotchkiss's Water Wheels, Iron Water Wheels of any size, Portable Saw Mills, complete; Bogardus's celebrated Planetary Horse Powers; heaving forgings and castings for steamboats and rolling mills, Ratchet Drills of superior quality for machinists, Saw Gummers, Hand drills, Tyre Benders, and shafting and machinery generally.
38 1y

E. A. BOURRY & H. E. ROEDER—Consulting and Mechanical Engineers; Office No. 333 Broadway, New York City. 43 9*

C. B. HUTCHINSON'S PATENT STAVE Cutting Machines, the best in use, and applicable alike to thick or thin staves; also his Head Cutting and Turning, and Stave Jointing Machines.
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J. B. WHITE'S PATENT CAR AXLE LATHES—also Patent Engine Screw Lathes, for boring and turning tapers, cutting screws, &c. We manufacture and keep constantly on hand the above lathes; also double slide Chuck and common Hand Lathes, iron Planers, S Ingersol's Patent Universal Ratchet Drill, &c. Weight of Axle Lathe, 5,500 lbs; price $600; Engine Screw Lathe, 1400 to 7,000 lbs; price $225 to $675, BROWN & WHITE,
27tf Windsor Locks, Conn.

PORTABLE STEAM ENGINES—The subscriber is now prepared to supply excellent Portable Engines, with Boilers, Pumps, Heaters, etc, all complete, and very compact, say 1, 2, 2 1-2, 3, 4, 6, 8, and 10 horse-power, suitable for printers, carpenters, farmers, planters, &c, they can be used with wood, bituminous, or hard coal; a 2 1-2 horse engine can be seen in store, it occupies a space 5 feet by 3 feet, weighs 1500 lbs., price $240; other sizes in proportion. S. C. HILLS,
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THE NEW HAVEN MANUFACTURING CO. No. 2 Howard st. New Haven, Ct., are now finishing 6 large Lathes, for turning driving wheels, and all kinds of large work; these lathes weigh 9 tons, and swing 7 1-3 feet, shears about 16 feet long. Cuts and further particulars can be had by addressing as above, post-paid, or to S. C. Hills, agent N. H. M. Co., 12 Platt st, N. Y. 28tf.

LEE & LEAVITT—Manufacturers of every description of Cast Steel Saws, No. 53 Water street, between Walnut and Vine, Cincinnati, O. 27 6m*

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SCIENTIFIC MUSEUM.

Steam Hod Carriers.

During the three days previous to the 12th inst., the solar heat was so great in our city that no less than two hundred persons died from its effects. This number, together with those who died on the 13th and 14th, swelled the list to at least 250. We carefully examined the Coroner's reports as they were published from day to day, which, so far as could be ascertained, gave the places of nativity of each. These reports reveal the astounding fact that six-eighths of those who died were natives of Ireland, and only about two-fiftieths natives of the United States, all the rest being foreigners. Those who died were mostly hard-working people, and the majority of them, we have no doubt, were hod-carriers. There is no toil so severe as that of carrying mortar and bricks up three or four stories upon men's shoulders in hot summer weather: it is an occupation which we would like to see abolished as soon as possible, and we cannot perceive any difficulty in the way of doing this. Those builders who undertake and execute large contracts in our city, we believe, would find it profitable to use portable steam engines for the purpose of elevating stones, brick, timbers, and mortar, instead of raising them by manual power—such as by men working the crank of the derrick, and carriers going up the ladders with hods. The steam engine could work the crank shaft, to wind up the rope or chain on a windlass, and the rope could pass over a pulley attached to a movable beam secured alternately on successive scaffolds of the building. Men on the ground would only have to load the buckets to carry up the brick and mortar, and those at the top would only have to unload and carry the materials to different parts of the scaffolding. All the running up and down on ladders would be saved, severe labor would be abriged, and consequently both employers and employees would be benefitted. Even if a steam engine were not adopted every builder could easily erect a portable crane on the scaffolds and elevate the building materials with it.

We have directed attention to this method of elevating building materials more than once during the past seven years, and it has given us some pleasure to see our suggestions adopted on a number of buildings now in the course of erection in our city. We are aware that we are recommending nothing new to those who have travelled over many lands, but it is something new to many of our builders, so far as their practice is concerned. In view of the awful mortality to which we have alluded, we hope our builders will not forget nor neglect to provide, as soon as possible, a remedy for manual hod-carrying. The steam hod-carrier is perfectly practicable and economical, and will not injure but benefit the builder and laborer "in both purse and provender."

Great Telegraph Cable.

We learn by the "Paducah (Ky.) Pennant," that a great telegraph cable was laid across the Ohio River at that place, on the 26th inst. by Tal. P. Shaffner, Secretary of the American Telegraph Confederation, assisted by J. B. Sleeth, Mechanical Engineer. It is composed of a large iron wire, covered with three coatings of gutta percha, making a cord of about five-eigths of an inch in diameter.

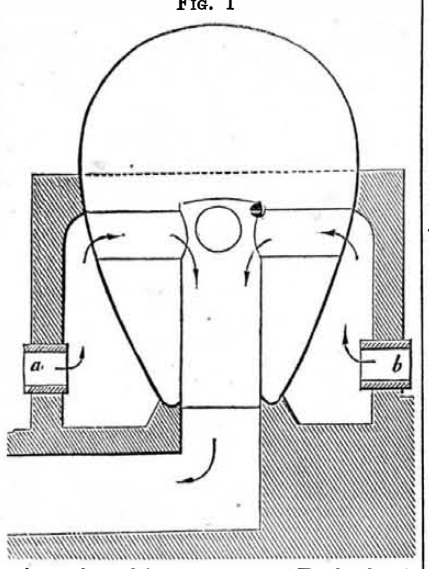
To protect this from wear, and for security of insulation, there are three coverings of strong Osnaburg, saturated with an elastic composition of gutta percha, and around this are eighteen large iron wires, drawn as tight as the wire will bear, and the whole is then spirally lashed together with another large wire. passing around at every ½ of an inch.—The whole forms a cable of near two inches in diameter.

This wire conducts the electric current beneath the bed of the Ohio for a distance of 4,200 feet, and is said to be the longest telegraph cable in the Union. The company was much troubled before on account of unsuccessful efforts to cross the river with the wire, and secure it against accident. It is believed that this cable will effect a great saving to the company, and at the same time obviate much trouble.

The Egg-Shaped Vertical Boiler.

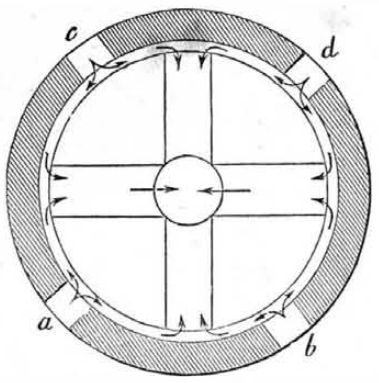
Having presented a great number of engravings of boilers in our last volume, and also a great amount of information on this very important subject, we present the following engravings of the "egg-shaped boiler," much used in some parts of England. A description and diagram appeared in a communication in the last number of the "London Artisan," by Robert Armstrong, the author of the best work ever published on steam boilers.

FIG. 1



This boiler is well adapted to be worked by the waste heat of puddling furnaces in iron works, and for this purpose it was originally contrived. Two boilers of this description, 9 feet in diameter and 18 feet high, in an iron works at Wolverhampton, England, made steam sufficient to work an engine of 80 horse power from the spare heat proceeding from four puddling furnaces—two furnaces to each boiler. Figure 1 is a vertical section, and figure 2 a plan view. The arrows show how the heated gases are admitted by the flues, *a b c d*, from the puddling furnaces. These meet at the centre, and pass down and out through the vertical flue, the greatest heat being applied nearest to the surface of the water, the correct principle.

FIG. 2.



Having presented a new puddling furnace in the last number of the Scientific American, and having stated in describing it, that it was especially adapted for using waste heat for raising steam to work the engines, this boiler will form a useful accompaniment to the same.

Poetry and Science.

"The National Association for the Advancement of Education," met at the city of Pittsburgh, Pa., on the 9th inst., and had an interesting time of it. Professor Henry, of the Smithsonian Institute was chosen Chairman, and made an excellent introductory speech, in which he gave a sketch of his own life. He has been a watchmaker, schoolteacher, engineer, and professor in a college. On the second day Prof. S. S. Haldeman, of Pa., delivered a fiery and able address on the ignorance of science displayed by poets and mere literary men, and the evil resulting from the same. He believed that the *judgment*—the most important faculty of the mind—was not so much cultivated as the imagination. The judgment could only be cultivated by a study of physical and natural science, while the imagination thrived on fiction; the former dealt with rigid truth, the latter with slipshod falsehood. He exposed the ignorance of science displayed by Montgomery in the poem of the Pelican Island, wherein he introduces a "nautilus" as sailing on seas where it is never found. Goldsmith, the poet—a reader *only* of scientific works, ignorantly described the crab and the tortoise as belonging to the same class, and Mrs. Sigourney wrote of the zoophytes as insects. In a room of 50 or 60 students studying Butler's Analogy, he had heard the question asked, "how many legs has a fly?" and not one could answer it. He gave the shallow literati of the press a severe flagellation about the Paine Light. He said:—

"Education should teach us to think, not to imagine. The prominence given to imagination crowds the world with superficial pretenders, expounders of false reforms, educated people who were never taught to reason.—We flatter ourselves upon our intelligence, yet we have seen almost the entire newspaper press—that index of the public mind—giving credence to the unphilosophical, but (to the the ignorant) plausible, explanation of the apparatus to produce the Paine light; in which the prominent feature of its tremendous power was increased weakness. Mathematics keeps its votaries so perfectly in the proper track, that they are not generally good investigators where observation and judgment are required, and we consequently find that mere mathematicians are generally not remarkable for making logical deductions in general sciences, although mathematics is the most logical of the sciences. It is only when the mathematician cultivates the sciences of observation that we see the triumphs of the human mind, as in astronomical research, where minute observation, careful manipulation, exact comparison, and profound judgment are brought into action. Research in other branches of natural philosophy, in mechanics, engineering, natural history, and chemistry, also bring the reasoning powers into activity, and afford facilities to a much greater number of inquirers."

He also gave Harper's Magazine a severe drubbing for dabbling in science, in an article for July, on shells, which he characterized as "a tissue of absurdities." He also gave Putnam's Magazine a rebuke for some mistakes in treating of the natural sciences. The object of the professor was to show the evils of imaginative studies, by giving them a too prominent place in education. Bishop Potter replied to the professor, and considered the arguments presented to be against the study of natural sciences in schools. A number of others came up to the defence of poetry and imaginative literature; but Prof. Haldeman was right. The true alone is the *beautiful*, and poets and literary men, when they write upon any subject, should understand it or keep *mum*. It is indeed true that too many men write about subjects (making a great pretence to profundity) of which they are perfectly ignorant, and we have had abundant evidence of the truth of what we say in respect to the very case mentioned by Professor Haldeman. When the Ericsson also created such an excitement in the months of last January and February, and nearly the whole newspaper press of this city, in their ignorance of science, became *non compus mentis* about "the good time coming," the "Philadelphia Ledger" stated that the "Scientific American" stood alone, as it did on the Paine Light, when it had an array of talent equally great against it, and it, the "Ledger," would wait for future developments. The result has justified the confidence which that paper reposed in our opinions, and yet for all this, we do not pretend to be perfect—all men are liable to make mistakes. There is a great and general ignorance of science and philosophy, but this, we believe, is not owing, as Professor Haldeman said, to the super cultivation of the imagination, but the general disinclination in mankind to severe mental toil.

LITERARY NOTICES.

ELEMENTS OF ANATOMY AND PHYSIOLOGY—By Justin R. Loomis; New York City: Lamport, Blakeman & Law. A very good book—the best book of its size, treating upon these important subjects, we have ever seen. There is a dignity and conciseness about the style which admirably fit it for its purpose. We have looked in vain for the diffuseness diluted and the senseless repetitions of some of our popular text books. We expect for Prof. Loomis a brilliant success as a book maker.

MINIFIE'S MECHANICAL DRAWING BOOK—For self-instruction. Part 10. A useful and practical work. Published by Wm. Minifie, Baltimore; Dewitt & Davenport, New York, agent.

MARK HURDLESTONE; or, The Two Brothers—By Mrs. Moodie, author of "Roughing it in the Bush," "Enthusiasm," &c. Dewitt & Davenport, publishers, 156 Nassau st, New York. This is a work of consummate interest and is written in a style of elegant refinement, characteristic of the gifted authoress, who is a sister of the celebrated Agnes Strickland. It forms a 12mo. book of over 350 pages, on excellent white paper and in faultless typography.

NEW PROSPECTUS OF THE SCIENTIFIC AMERICAN

SPLENDID PRIZES!

The first number of the *NINTH VOLUME* of the SCIENTIFIC AMERICAN will be issued on the 17th of September. We are grateful for the very liberal encouragement which we have received from our readers, and take this occasion to express to them our gratitude. We are also under many obligations to our cotemporaries for favorable notices.

The next volume will be commenced with *new and beautiful type*, printed on paper manufactured expressly for this publication, of *greatly increased weight and finer quality*: this item alone will increase our yearly expenses over $3000; in addition to this we shall increase our present able Editorial force as it is our intention to continue the Scientific American, "THE LEADING AND MOST RELIABLE PRACTICAL SCIENTIFIC JOURNAL IN THE UNITED STATES" It will continue the unflinching advocate of all *useful improvements*, and it will fearlessly expose all unreliable and deceptive schemes appertaining to its character; [in this respect it has gained a reputation superior to any other work of the kind in the world]

The opening of the CRYSTAL PALACE in this city forms an object of rare public interest; we shall devote a full page of the paper every week to careful criticisms, reviews, and illustrations of the objects most worthy of attention. We hope to render this department especially interesting to all our readers, whether they visit the Fair or not. The copious and FINELY EXECUTED ENGRAVINGS of Machinery, New Inventions, etc.—the FOUR HUNDRED PAGES of valuable *Scientific and Practical Reading*—the USEFUL RECEIPTS—the *full Report* of all the PATENT CLAIMS, and the reliable character of the journal on all branches within its field of labor—render it worthy of the support which it has so liberally received from its intelligent class of readers.

The circulation of the Scientific American during the present volume has exceeded EIGHTEEN THOUSAND COPIES PER WEEK. The edition on the new volume will be commenced with *twenty-three thousand*, which we feel confident will not be an over calculation. Subscribers, to ensure the numbers from the commencement of the volume, should send in their subscriptions early, as many were disappointed in not obtaining the complete set of the present volume.

The Scientific American is in form SUITABLE FOR BINDING, and each volume is accompanied with a *full Index* of all the subjects, which renders it an ENCYCLOPEDIA OF USEFUL, SCIENTIFIC, and MECHANICAL INFORMATION, for present as well as future reference.

Hoping to stimulate our readers to greater activity in spreading the circulation of the Scientific American, we offer the following Splendid Prizes for the largest list of mail subscribers sent in by the first of January next.—

$100 will be given for the largest list.	
$75 for the second largest list.	
$50 for the third	ditto.
$45 for the fourth	ditto.
$40 for the fifth	ditto.
$35 for the sixth	ditto.
$30 for the seventh	ditto
$25 for the eighth	ditto.
$20 for the ninth	ditto.
$15 for the tenth	ditto.
$10 for the eleventh	ditto.
$5 for the twelfth	ditto.

The cash will be paid to the order of the successful competitors, immediately after January 1st, 1854.

These prizes are worthy of an honorable and energetic competition, and we hope our readers will not let an opportunity so favorable pass without attention.

Terms! Terms! Terms!

One copy, for One Year	$2
" Six Months	$1
Five copies, for Six Months	$4
Ten Copies for Six Months for	$8
Ten Copies for Twelve Months,	$15
Fifteen Copies for Twelve Months,	$22
Twenty Copies for Twelve Months,	$28

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